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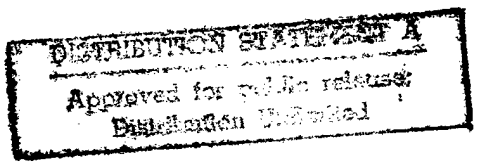
21 March 1983

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 181



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CONTENTS

MAJOR QUEENSLAND CITY ADOPTS ANTINUCLEAR STAND

Action in Ipswich

Brisbane THE COURIER-MAIL in English 17 Dec 83 p 20

[Text]

IPSWICH last night became Queensland's first nuclear-free zone city, possibly thwarting any plans for a $1000 million uranium enrichment plant west of Brisbane.

The decision could have a serious impact on State Government plans to establish a uranium enrichment plant in south-east Queensland because major road and rail links pass through the city of 75,000.

The establishment of such a plant has the open support and encouragement of the Premier, Mr Bjelke-Petersen, and could place him at loggerheads with the council.

The declaration has the full backing of the Ipswich Trades and Labor Council and all trade unions were asked last night to recognise the declaration and refuse to handle any uranium being transported through the city.

The main western railway line to Toowoomba and the inland interstate highway to Sydney pass through Ipswich.

The nuclear-free-zone proposal was part of a major submission to the Ipswich City Council by the Finance Committee chairman, Alderman Paul Tully.

He hopes the decision will set a precedent for Queensland's 134 local authorities.

He said a recent statement by the Deputy Premier and Member for Ipswich, Dr Edwards, that he would welcome a uranium enrichment plant in the area had angered council members and caused alarm in the local community.

The Federal Government has given approval for plans by the Uranium Enrichment Group of Australia — made up of CSR Ltd, BHP, the Western Mining Corporation and Peko Wallsend — to build a plant.It would have 50 percent ownership.

The group announced on October 9 that the Brisbane region had been selected for detailed site studies for an enrichment industry.

The decision on whether to build a plant is still two years away.

The areas under review are reported to be Caboolture and Beaudesert but no definate site has actually been named.

The plan has been rejected by the Ipswich Mayor, Ald. Freeman, and Caboolture Shire chairman, Councillor Barr.

"We will not stand by and allow a nuclear plant to be established in our region," Alderman Tully said.

The Local Government Act empowers all councils to make decisions relating to the health, welfare and safety of residents.

Pine Rivers Shire Position

Brisbane THE COURIER-MAIL in English 17 Dec 82 p 20

[Text]

RESIDENTS of the Pine Rivers Shire on the northern outskirts of Brisbane want nothing to do with a uranium enrichment plant.

Their concern led the Pine Rivers Shire Council at its last meeting to passa resolution declaring the shire a nuclear-free zone.

Council chairman, Councillor Allan Hughes, said yesterday proposals that the plant be established at Caboolture, which was "just up the road" had alarmed residents.

He said the council would write to the State Minister for Mines, Mr Gibbs, expressing strong opposition to a proposal that a uranium plant be built in Queensland, and especially in the Caboolture area.

CSO: 5100/7516

GOVERNMENT MOVES AHEAD WITH SYNROC NUCLEAR WASTE PLANT

Canberra THE AUSTRALIAN in English 31 Dec 82 p 9

[Article by Jane Ford]

[Text]

"NUCLEAR waste problem solved", "N-waste made safe" proclaimed the headlines in July, 1978, when Synroc, the Australian-developed nuclear waste disposal method, was unveiled.

Its inventor, Professor Ted Ringwood, director of the Australian National University's Research School of Earth Sciences, claimed the synthetic rock was far superior to borosilicate glass — the method most favored by Europe and the United States — and could safely immobilise nuclear material for tens of thousands of years.

Sceptics, particularly overseas, challenged those claims.

But now, four years later, many are having to seriously reconsider Synroc as an alternative waste disposal method.

Tests here and overseas have shown that the synthetic rock, which actually incorporates the waste into its crystalline structure rather than just containing it, is much more stable than borosilicate glass, particularly at high temperatures and pressures.

It can withstand temperatures of well over 300C, unlike glass which becomes susceptible to leaching by groundwater above 100C. For the key fission products of cesium and strontium it has been found to be 1000 times more resistant to leaching than glass and for the more long-lived elements, such as plutonium and neptunium, 10,000 times more resistant.

This means Synroc can be buried deep underground, far away from geological disturbances, unlike glass which cannot withstand the high temperatures at these depths.

Since 1980 the Australian Government has been strongly backing the scaling up of the process. It has just decided on a builder for a $2.7 million commercial demonstration plant to be built at the Atomic Energy Commission's headquarters at Lucas Heights, Sydney, which will be a proving ground for the engineering feasibility of a full-scale plant and determine its commercial viability.

It will be the same size as a waste solidification plant recently opened in France and about a third the size of one under construction in Britain.

The plant, which will use simulated waste made from non-radioactive chemicals most identical to nuclear waste, should be completed within two years. Once operating it will take about a year to prove whether the method is viable.

Design and construction of the plant follows years of work by Professor Ringwood and his team on perfecting both the mineral composition of Synroc and the best method of incorporating waste into it.

The rock now consists of three naturally occurring minerals — zirconlite, perovskite and hollandite. These are made from oxides of five simple elements — titanium,

zirconium, calcium, barium and aluminium.

Deep burial is one of Synroc's major advantages over borosilicate glass as it means it can be deposited up to 4km underground in areas of impermeable rock, well below the regions normally affected by groundwater.

Professor Ringwood estimates that one such drill hole, 1m in diameter could hold all the nuclear waste produced in Britain in four years.

Borosilicate glass cannot withstand the high temperatures underground at this depth and instead many European countries plan to dispose of the glass in large mined stores only 500m to 700m below the surface. These could be affected by geological disturbances and would be much more difficult to seal than drill holes.

Since the original development of Synroc, Professor Ringwood has developed a number of different forms. One, Synroc D, is specifically suitable for defence wastes and has been investigated by the US Government.

The most recent is Synroc F, which is particularly suitable for handling untreated spent fuel from nuclear reactors, which has not been reprocessed to remove the plutonium and uranium.

Professor Ringwood believes this development has major implications for nuclear non-proliferation.

Separation of plutonium and development of the "plutonium economy" is a major concern among many anti-nuclear activists because of the fear of diversion to produce nuclear weapons.

"Given the current unstable world political situation and the difficulties of regulating and controlling the distribution of fissile materials, disposal of spent fuel without reprocessing has some major attractions," says Professor Ringwood.

He says a moratorium on reprocessing for two to three decades would not seriously deplete world uranium reserves, but could provide a breathing space to develop new technologies to stop the diversion of plutonium into weapons manufacture.

Overall, Professor Ringwood is optimistic about the future of Synroc. He says the nuclear industry is going to have to come to terms with the realities of waste disposal and accept that waste management strategies will ultimately be determined by the public, not the experts.

This means that future disposal systems must be easily understood and readily evaluated by the layman as well as demonstratively safe.

CSO: 5100/7516

YEELIRRIE URANIUM PROJECT SET TO GET UNDER WAY NEXT YEAR

Melbourne THE AGE in English 31 Dec 82 p 11

[Article by Nigel Wilson]

[Text]

Western Mining Corporation expects to be able to give the go-ahead to the Yeelirrie uranium project early in the next financial year.

The company has been negotiating with the French Government-owned nuclear organisation, Commissariat a l'Energie Atomique, to take yellowcake from Yeelirrie and equity in the project, and negotiations with the other potential European buyers and partners are making good progress.

WMC is confident it has overcome the set back last May of Esso pulling out of development plan and the Yeelirrie partnership, leaving WMC responsible for marketing 90 per cent of the planned 2500 tonnes annual output. The other 10 per cent is the responsibility of Urangesellschaft.

The stigma of such an organisation as Esso describing Yeelirrie as uneconomic still rankless, but senior WMC executives believe that European organisastions are now confident that Yeelirrie can produce a long-term, stable supply.

Production from Yeelirrie, 530 kilometres northwest of Kalgoorlie, is planned from 1986. Shipment are planned no later than early 1987 to meet European demand in the late 1980s, although there might be a slight delay.

Unlike power utilities in the United States, the Europeans, particularly the French, are not worried by the Australian Government's policy of introducing a floor price on uranium export contracts.

The European buyers are not constrained by government regulations, such as those in the US, which demand that power utilities secure the cheapest possible source of feed.

The floor price is around $US30 a pound against the spot market price now of $US20 a pound — up from $17 in the past few months.

Australian uranium industry analysts say the spot market is being supplied by US power utilities selling uranium obtained on longterm contract to uranium suppliers which have to meet short-term delivery schedules.

The Europeans, the analysts say, are more concerned with security of supply than price, so the Australian floor price becomes irrelevant.

WMC agrees with this view but other uranium companies, however, are complaining about Canberra's policy.

The progress on Yeelirrie's corporate structure suggests that the project will be the next uranium development in Australia.

Also, a study into radiation levels at the Kalgoorlie pilot plant which was testing the metallurgical process for extracting the uranium oxide from the Yeelirrie ore have given the process a clean bill of health.

The study, under the terms of WA legislation covering radiation, found that people working in the plant come nowhere near the exposure limits for members of the general public.

Maximum allowable doses of whole body radiation are 5000 milliRems (mRems) for radiation workers and 500 mRems for the general public. Lung exposure maximums are 15,000 mRems for radiation workers and 1500 for the public.

The maximum body dose at the Kalgoorlie plant was 4.5 mRems over four weeks for maintenance staff and a lung dose of 22 mRems for a stockpile operator.

The maximum body dose at the mine site was 36.5 mRems for plant operators and 86.8 mRems lung dose for surveyors, drillers and ore graders.

CSO: 5100/7516

RAIL UNION WILL NOT HAUL MONAZITE ON ANTINUCLEAR GROUNDS

Perth THE WEST AUSTRALIAN in English 31 Dec 82 p 3

[Article by Paul McGeough]

[Text] The Australian Railways Union yesterday told Westrail that its members would no longer handle monazite railed regularly from Geraldton to Fremantle.

The WA secretary of the union, Mr Jim Hanley, said that the union's ban was on thorium--present in all WA monazite--because of insufficient checks on its use in the nuclear cycle overseas, mainly in Germany and France.

It was a separate issue to question about the health and safety of workers exposed to radiation.

The union was not sure if the ban would result in any of its member being put out of work.

Westrail secretary Trevor Tobin warned last night that jobs were being jeopardised.

Shifting the monazite--worth million of dollars--was an important and profitable section of railway business, he said.

Response

Westrail would consider today how to respond to the ban.

Mr Tobin said the union had indicated that this was a political move dictated by its national organisation. "It is a very sad state of affairs when they succumb to outsiders like that," he said.

Mr Hanley said he was unsure of the implications of the ban for Allied Eneabba.

[Allied Eneabba rails its mineral sands from near Eneabba to a separation plant at Narngulu, near Geraldton. It is then packed in bags and wrapped in plastic before being put in transport containers.

It is railed to Fremantle for export because there are no container-handling facilities at Geraldton and the harbour cannot handle big ships.]

The managing director of Allied Eneabba Ltd, Mr A. Tough, said last night: "If the railways don't want 10,000 tonnes of business each year it's one reason why this country is going down.

"All the ARU is doing is putting workers out of jobs."

Mr Tough said that the ban was not likely to cause the company any embarrassment in meeting export orders.

Referring to the ARU's statement yesterday that the decision had been implemented after a meeting of workers at Geraldton, Mr Tough said: "My guess is that this has got nothing to do with mass meetings of the workers or we would have heard about it."

CSO: 5100/7516

PRC DENIES NUCLEAR COOPERATION WITH PAKISTAN

OW261232 Hong Kong AFP in English 1220 GMT 26 Feb 83

[Text] Beijing, Feb. 26 (AFP) -- China today again denied it was cooperating with Pakistan in the nuclear field. Rejecting an assertion by U.S. Assistant Under Secretary of State for Asian Affairs Howard B. Schaffer that there was "a nuclear relationship" between Beijing and Islamabad, a Chinese Foreign Ministry spokesman said: "There is no such thing."

Mr Schaffer's remarks, at a public hearing of the House of Representatives' Foreign Affairs Subcommittee in Washington, marked the first official U.S. comment on the reported Sino-Pakistani nuclear cooperation.

The Chinese Foreign Ministry stressed that it had already denied last month press reports from Washington quoting U.S. intelligence sources as saying that China had supplied Pakistan with information on the manufacture of an atomic bomb.

In Washington, State Department officials said the U.S. Government would refuse to assist China's civilian nuclear program as long as Beijing would not pledge not to give nuclear aid to their countries which did not sign the non-proliferation treaty. The sources also indicated that U.S. Secretary of State George Shultz had sought such an undertaking from the Chinese leadership when he visited Beijing early this month but that his request was turned down.

CSO: 5100/44

LAW ON PHYSICAL PROTECTION OF NUCLEAR MATERIALS PUBLISHED

East Berlin GESETZBLATT DER DEUTSCHEN DEMOKRATISCHEN REPUBLIK in German Part I No 21, 1 Jun 82 pp 410-412

[Official text of "Order dated 7 April 1982 on the Physical Protection of Nuclear Materials and Nuclear Facilities--APS," effective 1 July 1982, signed by Prof Sitzlack, MD, state secretary, president, State Office for Nuclear Safety and Radiation Protection]

[Text] The following is hereby ordered for the physical protection of nuclear material and nuclear installations in agreement with the directors of the appropriate central government agencies:

Article 1: Scope

(1) This regulation applies to the following:

Government agencies and economy-managing agencies,

Combines, enterprises, and installations (hereafter called enterprises),

Which

Handle nuclear material,

Plan or erect facilities and rooms for handling nuclear material,

Plan, erect, or operate nuclear facilities and work out the pertinent technologies.

(2) In addition to that, the directives issued by the president of the State Office for Nuclear Safety and Radiation Protection in agreement with the directors of the appropriate central government agencies are valid for the uniform application, implementation, and supervision of physical protection of nuclear material and nuclear facilities (hereafter called physical protection).[1]

(3) This regulation applies to nuclear material of the following kind:

Plutonium with a mass of 15 g, except for plutonium with an isotope concentration of more than 80 percent plutonium-238;

Uranium-233 with a mass of more than 15 g;

Uranium-235--uranium enriched to 20 percent uranium-235 or more, with a uranium-235 mass greater than 15 g,

Uranium enriched to 10 percent uranium-235 or more but less than 20 percent with a uranium-235 mass of more than 1 kg,

Uranium, enriched above the natural value but less than 10 percent with a uranium-235 mass of 10 kg or more;

Natural uranium with a mass of 500 kg or more, except for uranium-containing materials in mining or ore processing as well as ore residues;

Depleted uranium with a mass of 1,000 kg or more;

Thorium with a mass of 1,000 kg or more;

Nuclear material in molded parts (fuel elements, fuel rods, cassettes, fuel panels or pellets with identification numbers).

The nuclear material is categorized in the appendix to this regulation.

(4) This regulation applies to the following nuclear facilities:

Nuclear reactor plants,

Nuclear power plants,

Subcritical systems,

Installations for the procurement and production of nuclear fuels;

Installations for the preparation and processing of nuclear fuels;

Installations for the reprocessing of irradiated nuclear fuels;

Installations for the storage of nonirradiated and irradiated nuclear fuels with the exception of installations for brief storage of such substances during transport;

Central facilities for the collection, processing, and final storage of radioactive waste.

Article 2: Definitions

This regulation provides for the following meanings:

1. Physical Protection:

All requirements, measures, means, and methods which are drafted and carried out so as effectively to prevent criminal attacks and unauthorized actions

against nuclear material and nuclear facilities, recognizing them at the right time and preventing them, as well as recovering lost nuclear material.

2. Handling Nuclear Material:

Acquisition, importing and exporting, transfer, and transport via public transportation; handling (extraction, preparation, production, further processing, use, storage, in-house transport, removal, and any other utilization) involving nuclear material.

3. Nuclear Material Transportation:

Shipment of nuclear material with a carrier on public transportation routes including transloading and intermediate storage connected with shipment; nuclear material transport begins upon leaving the plant compound of the sender and it ends upon arrival at the plant compound of the recipient.

4. In-House Nuclear Material Transport:

Transport of nuclear material in enterprise compound.

5. International Nuclear Material Transport:

Transport of a shipment of nuclear material with a carrier which is to go beyond the sovereign territory of the state from which the shipment comes, starting with departure from a facility of the sender in that state and ending with arrival at a facility of the recipient in the state for which it is ultimately intended.

6. Safety Project:

Project for structural engineering and safety-engineering measures aimed at physical protection.

7. Safety Concept:

Concept on all planned personnel, organizational, structural-engineering and safety-engineering measures and methods for physical protection.

8. Transportation activity planned:

Plan of measures for the physical protection of nuclear material shipments.

Article 3: Basic Principles and Objectives

(1) Physical protection within the meaning of this regulation contains the complete and proper application and cooperation of personnel, organizational, structural-engineering and safety-engineering measures, means, and methods (hereafter called safety measures) and must be guaranteed at all times.

(2) Safety measures are to be so coordinated that criminal attacks and unauthorized action against nuclear material and nuclear facilities will be effectively prevented and that they will be recognized at the right time and can be prevented.

(3) Physical protection must be included in damage protection planning and must be considered during the drafting of operational documents in keeping with legal regulations.[2]

(4) Reports and documentation for physical protection must be handled confidentially.

Article 4: Responsibility

(1) The directors of government and economy-managing agencies and of enterprises, which are legal entities or asset owners of nuclear material or nuclear facilities, are responsible for guaranteeing physical protection.

(2) The directors must:

Make sure that the safety projects, safety concepts, and transportation activity plans according to Article 5, Paragraph 3, will be worked out, that safety measures will be implemented, that prerequisites will be created for the actual entry into force of enterprise regulations, and for carrying out inspections;

Assign a deputy for physical protection (hereafter called deputy) and specify his rights and duties, considering the fundamental requirements according to Parapgraph 3; the deputy's name must be communicated to the State Office for Nuclear Safety and Radiation Protection;

Involve the deputy in the planning and preparation of new work projects concerning the handling of nuclear material as well as the operation of nuclear facilities and detach him to attend advanced training courses given by the State Office for Nuclear Safety and Radiation Protection;

See to it that official documented familiarization courses on physical protection are given at intervals of 6 months to staff members who have access to nuclear material and nuclear facilities.

(3) The deputy must:

By direction of the director, supervise compliance with the physical protection safety measures resulting from this regulation and the directives according to Article 1, Paragraph 2, and the in-house regulations;

When observing shortcomings and related impairments of physical protection, in case of violations of this regulation and the directives according to Article 1, Paragraph 2, or in-house regulations, and in case of extraordinary events in the field of physical protection, demand that the appropriate leading staff members immediately correct the shortcomings or he must initiate the corresponding measures;

Report to the State Office for Atomic Safety and Radiation Protection concerning requirements for supervisory activities and supply estimates, expert reports, and comments on problems dealing with his activity as deputy;

Annually submit a comprehensive estimate concerning compliance with and effectiveness of physical protection as well as preventive measures as a result of the analysis of extraordinary events in the field of physical protection to the enterprise manager for confirmation and, each time, forward it to the State Office for Atomic Safety and Radiation Protection by 31 March of the next year.

Article 5: Approval

(1) The planned and implemented safety measures for physical protection require the approval of the State Office for Atomic Safety and Radiation Protection.

(2) The State Office for Atomic Safety and Radiation Protection will issue approval in the context of the Radiation Protection Licensing Procedure[3] if evidence has been supplied that the requirements for guaranteeing physical protection have been met according to this regulation, including the directives according to Article 1, Paragraph 2.

(3) Approval must be requested in writing by government agencies, economy-managing agencies, and enterprises along with the request for radiation protection license from the State Office for Atomic Safety and Radiation Protection. The following documents must be added to the application:

For nuclear facilities:

Safety project for approval for the erection of a nuclear facility according to Article 5, Paragraph 1, of the Nuclear Facilities Licensing Regulation and safety concept for approval for operation of a nuclear facility according to Article 6, Paragraph 1, of the Nuclear Facilities Licensing Regulation;

For nuclear material outside nuclear facilities:

Safety concept for approval for investment projects according to Article 10, Paragraph 1, of the Radiation Protection Decree;

For nuclear material shipments:

Transportation activities planned for the issue of permits for shipment according to Article 30, Paragraph 1, of the ATRS (Regulation on the Transport of Radioactive Substances); if no permit is required for nuclear material shipment according to Article 30, Paragraph 1, ATRS, then the shipment activities planned must be submitted to the State Office for Atomic Safety and Radiation Protection for approval at least 20 working days prior to the start of the shipment.

(4) Approval is issued in writing. It can be connected with special requirements and a deadline can be specified. Approval can be withdrawn or amended if the prerequisites that have led to issue no longer obtain.

(5) Changes with respect to the data constituting the foundation of approval require confirmation by the State Office for Atomic Safety and Radiation Protection to the extent that they essentially influence physical protection. Confirmation becomes a part of the approval.

Article 6: Supervisory Agency

(1) The State Office for Atomic Safety and Radiation Protection is the appropriate supervisory agency for physical protection.

(2) The Physical Protection Inspectorate of the State Office for Atomic Safety and Radiation Protection is responsible for supervising physical protection.

Article 7: Measures in Case of Extraordinary Events

(1) Extraordinary events in the field of physical protection must immediately be reported to the State Office for Atomic Safety and Radiation Protection regardless of the duty to report to other government and economy-managing agencies. The guideline for response to extraordinary events[4] must be used accordingly.

(2) For the investigation of extraordinary events in the field of physical protection with serious results, a special commission is established within the State Office for Atomic Safety and Radiation Protection; it consists of staff members from the appropriate central government agencies and their subordinate enterprises.

(3) The tasks, operating procedure, and makeup of the special commission will be specified by the president of the State Office for Atomic Safety and Radiation Protection in agreement with the directors of the appropriate central government agencies.

Article 8: Special Provisions

In justified cases, the president of the State Office for Atomic Safety and Radiation Protection may issue special provisions for the above points.

Article 9: Final and Transition Provisions

(1) This regulation takes effect on 1 July 1982.

(2) For nuclear material already in transit, for nuclear installations in the planning, erection, or operation stage, as well as existing facilities and rooms for handling nuclear material it will be necessary, within 6 months after entry into force of this regulation, to apply for approval in accordance with the provisions of Article 5 to the State Office for Atomic Safety and Radiation Protection, attaching the required documents.

FOOTNOTES

1. These directives are directly forwarded to the particular government and economy-managing agencies and enterprises.

2. The following currently apply: Decree of 13 August 1981 on Damage Protection (GBL., I, No 27, p 329); Decree of 15 May 1981 on Disaster Protection (GBL., I, No 20, p 257).

3. The following currently apply: Decree of 26 November 1969 on Protection against the Damaging Effect of Ionizing Radiation--radiation protection decree--(GBL., II, No 99, p 627); Regulation of 12 April 1978 on the Shipment of Radioactive Substances--ATRS--(special reprint No 953 of GESETZBLATT); Regulation of 21 June 1979 on the Issue of Radition Protection License for Nuclear Facilities--Nuclear Facilities Licensing Regulation--(GBL. I, No 21, p 198).

4. The Guideline of 3 April 1974 on Response to Extraordinary Events is currently applicable (MITTEILUNGEN DES STAATLICHEN AMTES FUER ATOMSICHERHEIT UND STRAHLENSCHUTZ [Communications of the State Office for Atomic Safety and Radiation Protection], No 3, 1974).

Appendix for the Above Regulation

Table: Categorization of Nuclear Material

Material	Form	1 Kategorisierung		
		I	II	III
Plutonium[a]		$m \geq 2$ kg	2 kg $> m >$ 500 g	500 g $\geq m >$ 15 g[b]
Uran-233 5				
Uran-235[c] 6 2	– Uran, angereichert auf 20 % Uran-235 oder mehr	$m \geq 5$ kg	5 kg $> m >$ 1 kg	1 kg $\geq m >$ 15 g[b]
3	– Uran, angereichert auf 10 % Uran-235 oder mehr, aber weniger als 20 %	–	$m \geq 10$ kg	10 kg $> m >$ 1 kg[b]
4	– Uran, angereichert über den natürlichen Wert, aber weniger als 10 % Uran-235	–	–	$m \geq 10$ kg[b]
Natururan 7		–	–	$m \geq 500$ kg[b, d]
abgereichertes Uran 8		–	–	$m \geq 1\,000$ kg[b, d]
Thorium				

Key: 1--Category; 2--Uranium, enriched to 20% uranium-235 or more; 3--Uranium, enriched to 10 percent uranium-235 or more, but less than 20 percent; 4--Uranium, enriched above the natural value but less than 10 percent uranium-235; 5--Uranium-233; 6--Uranium-235 (c); 7--Natural uranium; 8--Depleted uranium; (a) All the plutonium, except for the plutonium with an isotope concentration of more than 80 percent plutonium-238; the categorization of plutonium-beryllium-neutron sources of unknown isotope composition is accomplished on the basis of the total plutonium mass of the neutron source; (b) If we fall below these boundary values, the nuclear material must be secured in accordance with the regulations applicable to handling radioactive substances, including protection against unauthorized access, and on the basis of the principles of order, safety, and secrecy; (c) The categorization is based on the isotope mass; (d) If the nuclear material has been irradiated, the safety measures according to II must be applied.

Nuclear material in molded parts (except for plutonium-beryllium-neutron sources), such as fuel elements, fuel rods, cassettes, fuel panels, or pellets with identification number, must at least be placed in category III.

If several of the above-mentioned materials are in transit together, categorization is accomplished during the approval procedure; the categorization of irradiated fuel cassettes from nuclear power plants is accomplished in the corresponding order.

5058
CSO: 2300/126

BRIEFS

UNDERGROUND RADIOACTIVE WASTE DUMPS--A report presents the progress in studies on safety of disposal of radioactive waste in deep-seated geological formations. Subsequently, the major hazards which may be expected when such deep-seated dumps are constructed in Poland in order to isolate high-, medium- and low-radioactivity waste from biosphere are discussed. The waste will be coming from nuclear power plants. In Poland, works connected with designing waste disposal sites are nowadays at the stage of analysis of concepts of surface dumping and underground burial of the waste. When the latter solution is chosen, further studies will be aimed at two tentatively accepted locations: one in layered Zechstein rock salt deposits in northern Poland and the other--in Archaic and Lower Paleozoic crystalline basement rocks in eastern Poland. In both case the rocks chosen as appropriate for construction of disposal sites are overlain by strongly water-saturated rock series, with hydraulic contacts between individual aquifers. Attention is paid to the necessity of careful surveying the hydrogeological conditions as the major prerequisite of safety in waste storage. Present knowledge of hydrogeological conditions impedes identification of major potential water hazards and related possibilities of migration of critical nucleids from the dump to surface. The major hazards may be connected with insufficient sealing in time of construction and filling-up shafts and an excessive effect of thermal field of high-radioactivity waste dump on surrounding rock massif. The latter is mainly the case of waste storage in rock salt deposit. [Excerpt] [Warsaw KWARTALNIK GEOLOGICZNY in Polish No 2, Apr-Jun 82 pp 443-451] [Full text will be published later]

CSO: 5100/3016

BIOGRAPHIC DATA ON NUCLEBRAS PRESIDENT

Rio de Janeiro O GLOBO in Portuguese 3 Feb 83 p 23

[Text] Brasilia--Despite the fact that he has been an advisor to Minister Cesar Cals in the nuclear area since 1979, Engineer Dario Gomes has a background that brings him much closer to being a dam man. He began to work in the hydroelectric sector in 1955 when he held the position of technical director of the Amapa Electricity Company.

His appointment as president of the Brazilian Nuclear Corporation (NUCLEBRAS) will certainly cool the historic disputes within the energy sector between the dam men (charged with the construction of hydroelectric plants) and the intransigent defenders of nuclear plants. That dispute resulted in a permanent confrontation of figures about the costs of generating hydroelectric and nuclear energy, having as its principal stage the congressional investigating committee which investigated the nuclear program.

As a source in the Ministry of Mines and Energy observed, the Dario Gomes administration will create conditions for greater understanding between NUCLEBRAS and the Brazilian Electric Power Stations Corporation (ELETROBRAS), preventing the nuclear energy sector from "being a foreign body" within the electric energy generating program. The same source observes that Dario Gomes will conduct the nuclear program within the strict limits established by the government, avoiding any disproportion between the pace intended by NUCLEBRAS for the installation of nuclear plants and the country's real needs for electric energy.

As an example of disagreements between NUCLEBRAS and ELETROBRAS may be cited the intense behind-the-scenes dispute regarding requirements for the year 2000--the so-called Plan 2000. NUCLEBRAS intended to establish the timetable for the eight plants and set a number the installation of which could be begun by that year. Discussions dragged out for almost 1 year, until in the second half of 1982 the matter was closed with the decision to establish a timetable for only four nuclear plants.

Despite being an active adviser of Minister Cesar Cals, having coordinated all important matters in the energy area (except oil), Dario Gomes assumed a discreet position within the ministry. He rarely received the press, always alleging that he was dealing with matters to be urgently forwarded

to the minister. On assuming the position of office chief last year, replacing General Luciano Salgado Campos, he became more accessible to the press, but he never agreed to have his name quoted in reports although he never expressed an opinion or supplied information that was in conflict with the minister's position.

Dario Gomes was born in 1925 in Belem do Para. In 1955, he became technical director of the Amapa Electricity Company. From 1962 to 1966, he worked for Minas Gerais Electric Power Stations (CEMIG), occupying, among other positions, that of chief of the hydraulic projects division. In 1972 he was chief of the ELETROBRAS Hydroelectric Plant Coordination Group; in 1973, he occupied the position of technical director of the Northern Electric Power Stations Corporation (ELETRONORTE); and in 1977 returned to ELETROBRAS as adviser to the director of planning and engineering.

As adviser to Minister Cesar Cals since March 1979, he represented the ministry in the Coordinating Commission to Safeguard the Brazilian Nuclear Program (COPRON) before the Foreign Ministry and the National Security Council. And he was coordinator of the Plasma and Nuclear Fusion Task Force.

Minister's Personal Victory

Brasilia--The appointment of Dario Gomes as president of NUCLEBRAS was a victory for Minister Cesar Cals, whose name is always included in the list of "replaceables" in the Figueiredo cabinet. It is even a more significant victory if one takes into account that among the presidents of the state enterprises attached to the Ministry of Mines and Energy, Paulo Nogueira Batista was the one who had the most difficult and complicated relationship with the minister. The former president of NUCLEBRAS rarely went to the office of Cesar Cals; it only happened when by virtue of the administrative structure the matters had to be treated directly with the minister. Whenever possible, Paulo Nogueira Batista preferred to conduct business with the secretary general of the ministry, Arnaldo Barbalho, who had an active participation in the preparation of the nuclear program, since he was also secretary general of the ministry during the last administration.

The connection between Dario Gomes and Minister Cesar Cals dates back to 1977. The minister occupied the position of director of coordination of ELETROBRAS and Dario Gomes was adviser to the director of planning and engineering. Upon assuming the ministry in March 1979, Cesar Cals invited Dario to be his adviser for electric and nuclear energy.

In September 1980, Cals tried to raise him to the presidency of ELETROBRAS as successor to Mauricio Schulmann, who had resigned because he disagreed with Minister Delfim Netto over the company's budget. President Figueiredo did not concur with the nomination and preferred to appoint in Schulmann's place the president of Itaipu Binational, General Costa Cavalcanti, who proceeded to hold the two positions concurrently. At the time, Cesar Cals was the target of criticism inside and outside the government.

Early last year, when the then office chief of the minister, General Luciano Salgado Campos, requested his resignation to try a possible candidacy for governor of Ceara, Cesar Cals replaced him with Dario Gomes, who continued to exercise the position of energy adviser. The appointment of Gomes as president of NUCLEBRAS, therefore, opens up two vacancies in the Ministry of Mines and Energy.

Cesar Cals Congratulates Dario Gomes

8711
CSO: 5100/2042

NEW NUCLEBRAS PRESIDENT PLANS NO CHANGE IN PROGRAM

Review of Research Projects

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 15 Feb 83 p 23

/Text/ Brasilia--Civil engineer Dario Gomes will assume office as president of the Brazilian Nuclear Corporation (NUCLEBRAS) tomorrow, with the promise to faithfully fulfill the responsibility that was entrusted by the federal government, namely, to manage the scarce resources without at any time assuming commitments that involved expenditures exceeding the company's budget already approved by the government for this year. The directive laid down for the new NUCLEBRAS administration includes greater participation by the Brazilian scientific community to give emphasis to national technological research in the nuclear area, within the limit of the investments already determined, according to the Ministry of Mines and Energy experts.

Dario Gomes is regarded by energy sector experts as "an expert qualified to fulfill his tasks and without the nuclear frenzy that characterized his predecessor, Ambassador Paulo Nogueira Batista, who, according to the same experts, perceived himself to be the Brazilian-German nuclear agreement itself and never accepted that agreement as only part of the Brazilian nuclear program as a whole. His successor shows that he thinks much differently because in the first interview he granted after he was appointed to the position, he pointed out that "one cannot confuse the nuclear program with the agreement because the agreement is only part of the program."

Nonetheless, Ministry of Mines and Energy experts and Minister Cesar Cals himself have been guaranteeing in recent days that the agreement will be fulfilled, not only to honor the commitment assumed by former President Geisel with Germany but also because Brazil needs to obtain nuclear technology from that country. However, according to the experts, that transfer of technology will be effected in a slow, gradual and sure manner.

In private talks, "in order not to hurt the ambassador even more," aides to Minister Cals said that the government will no longer tolerate bearing the burden of the megalomaniacal dreams of Paulo Nogueira Batista who tried to impose a program for the construction of up to 45 nuclear plants by the year 2000, including one in Amazonia, a region rich in hydric resources.

No Plans

According to experts, Dario Gomes will not make plans for new construction. On the contrary, during the whole of Figueiredo's administration he will even have to forget that the Brazilian-German agreement provides for the construction of eight nuclear plants and proceed with the work on the other four plants within the limit of available resources. Thus, work on Angra-II, to go into operation in 1988, will proceed; the civil work on Agra-III will begin in the second half of this year; and if the Brazilian economy reacts positively, public bids will be opened in the latter part of next year for the civil works of Iguape-I and II on the coast of Sao Paulo.

Parallel with those projects, Dario Gomes will begin to unify all research in the nuclear area that is being conducted in a scattered manner by research institutes and universities in an attempt to facilitate the development of national nuclear technology. For this, he can already rely on the presidential decree that centralized all research in that sector in the National Nuclear Energy Commission (CNEN) and NUCLEBRAS. In addition to that, according to ministry experts, the new president of NUCLEBRAS will promote meetings with the scientists who are conducting that type of research for the exchange of experiences and discussion of the federal government's plans.

Those attitudes that are going to be taken by Dario Gomes, according to ministry experts, will guarantee greater participation by the Brazilian scientific community. The same experts asserted, furthermore, that that was one of the reasons for the appointment of Dario Gomes. "It was a discreet way found by the government to give satisfaction to the Brazilian scientific community, especially those who have been violently criticizing the nuclear government."

Ministry aides said that before beginning the meetings with the scientists, Dario Gomes will make a survey of all the projects under way in the research institutes, universities and, principally, in the NUCLEBRAS subsidiaries: The NUCLEBRAS Mining Auxiliary Corporation (NUCLAM), NUCLEBRAS Isotopic Enrichment Corporation (NUCLEI), NUCLEBRAS Engineering Corporation (NUCLEN), NUCLEBRAS Heavy Equipment Corporation (NUCLEP), NUCLEBRAS Nuclear Power Station Construction Corporation (NUCON), and NUCLEBRAS Monazite and Associated Minerals Corporation (NUCLEBRAS Monazitica).

When the survey of the projects being carried out by all the subsidiaries is completed, Dario Gomes will determine which should be slowed down or speeded up so that the pace of the projects will be appropriate to the need to assimilate German technology and the development of national research.

German Position

The Federal German Embassy is avoiding making any comments on the dismissal of Paulo Nogueira Batista and the appointment of Dario Gomes. According to its spokesman, Guenter Schueze, the change in administration of NUCLEBRAS "does not represent a setback because the nuclear agreement is between the German and

Brazilian governments, and it is not true that the signing of the agreement was a personal thing of Ambassador Paulo Nogueira Batista, but of the Geisel government.

"Implementation of the agreement does not depend on one person but on the interest of both governments," added Guenter Schueze," and there is bilateral interest in proceeding with the agreement. Batista was an agent of the Brazilian Government." In the spokesman's opinion, the real problem is the economic crisis which, he pointed out, is a problem that Germany is also facing. According to this, that was the reason that led the Brazilian Government to delay construction of the nuclear plants.

"The postponement of the nuclear plants was not a great surprise to us," he declared. "It would have been a surprise if the Brazilian Government were to cut the investments of all the state companies, as it did, and increased only those of NUCLEBRAS." He said also that he understands that there is a curtailment in the demand for energy in Brazil and for that reason the government is not in a hurry to implement the agreement. Guenter Schueze concluded: "We hope that in the near future the Brazilian economy will resume its growth and that the government will resume the normal pace of the nuclear projects."

No Change in Plans

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 3 Feb 83 p 28

/Text/ Brasilia—The new president of NUCLEBRAS will be civil engineer Dario Jose Goncalves Gomes, a native of Para, 57 years old, office chief of the Ministry of Mines and Energy since July of last year, before which he was chief for nuclear affairs of the ministry. The appointment of the ministry

expert to replace Ambassador Paulo Nogueira Batista was made by Minister Cesar Cals and approved by President Joao Figueiredo. It was a political solution which, according to experts in the energy sector, will strengthen Minister Cals in the federal context and even in Ceara, because Dario Gomes can help it to execute its plan for the construction of a uranium processing factory in Itataia, in that state, where the country's largest uranium reserve is located. The announcement of Dario Gomes' name was made at 1630 hours by Minister Cals, in an atmosphere of great euphoria on the part of his aides.

Showing great satisfaction, Cals announced: "The new president of NUCLEBRAS is Dario Gomes. He studied planning, design and construction of nuclear power plants in Spain; he was my adviser for nuclear affairs, and the ministry's representative on nuclear affairs to the Foreign Ministry and the National Security Council and in the Nuclear Protection Programming Commission; he is familiar with the nuclear facilities of various countries, and knows the subject well." In 1981, Dario Gomes was in Germany with Cals for contacts with the German Government and then was adviser to Brazilian congressmen in a visit to the headquarters of the International Atomic Energy Agency (IAEA) in Austria.

No Changes

After the introduction by the minister, Dario Gomes then said what he is thinking of doing and not planning to do, making it clear that he has no intention of making any change in his predecessor's plans: "NUCLEBRAS' program will not be changed. It will be implemented according to the existing resources and the scheduling of nuclear plants. Angra-II will proceed at a slower pace, with operation scheduled for 1988; the civil construction work of Angra-III will be initiated the second half of this year; and in the second half of next year, bids will be opened for the Iguape-I and II projects, assuming an adjustment (delay) of 1 year for each plant."

The new president of NUCLEBRAS confirmed that he considers invalid the naming of Mendes Junior and Camargo Correa for the civil construction work of Iguape-I and II, done by NUCON without public bids, which is the main reason for Nogueira Batista's dismissal. Dario Gomes did not want to analyze this aspect. He preferred to guarantee that the next time there will be public bids.

Dario Gomes defends the feasibility on an industrial scale of the jet-nozzle uranium enrichment process purchased in Germany, thus far tested only on a laboratory scale. Yesterday, however, he stressed several times that the Brazilian nuclear program cannot be confused with the nuclear agreement. Although both have the same objective, he declared, the Brazilian-German agreement is part of the program, which also includes the development of national plasma and controlled fusion technology. He made it clear, however, that there will be no change in the agreement. "Only that the pace of implementation will be adapted to economic conditions.

Independent Program

Regarding an independent nuclear program, Dario Gomes observed that it has already been begun with the pilot plant for the production of UF-6 (uranium hexafluoride) that is being built in Sao Paulo, simultaneous with plasma and controlled fusion studies with the participation of the scientific community. Asked if he intends to give the Brazilian scientific community greater voice, he replied that "the community always participated in the nuclear program more or less, even criticizing it. The majority of the scientists are from the National Nuclear Energy Commission (CNEN), NUCLEBRAS, the Energy and Nuclear Research Institute (IPEN) and universities such as the University of Sao Paulo and of Rio Grande do Sul."

With regard to German participation in the program, he said that "KWU is fulfilling the agreement it made with Brasiul and Brazil is fulfilling the agreement it made with Germany, with normal adjustments in the timetables of projects under way because of the country's economic situation. That problem of delays is not only in the nuclear sector."

8711
CSO: 5100/2039

TEN BILLION CRUZEIROS TO BE ALLOCATED TO NUCLEAR RESEARCH

Rio de Janeiro JORNAL DO BRASIL in Portuguese 16 Jan 83 p 34

/Article by Eneas Macedo Filho/

/Text/ Sao Paulo--The federal government will invest about 10 billion of the 20 billion cruzeiros provided for the overall budget of the National Nuclear Energy Commission (CNEN) this year in research in the exclusively Brazilian alternative nuclear program. Those studies, centralized in the Energy and Nuclear Research Institute, will be concluded in 1990, a top-level official of the institute revealed.

The general details of that line of independent research, revealed by Minister Danilo Venturini, secretary general of the National Security Council, and confirmed by the minister of mines and energy, Cesar Cals, embrace a program the principal objective of which is to gain access to uranium enrichment technology through the ultracentrifugal process, a NUCLEBRAS adviser revealed. In the first stage, scheduled for 1987, a laboratory-scale enrichment plant is to go into operation; and approximately 3 years later, a semi-industrial unit will go into operation.

Alternative

According to that member of NUCLEBRAS who also participated in the latest reformulation of the nuclear program at the request of the presidency of the republic, the research of an alternative line to the Brazilian-German agreement began to be conducted in 1978. The decision taken by the federal summit (National Intelligence Service--SNI, National Nuclear Energy Commission--CNEN and the Brazilian Nuclear Corporation--NUCLEBRAS) sought to create a dichotomy in the program, separating the part dealing with the production of nuclear electricity from the part within the exclusive sphere of uranium enrichment technology, an essential item for national security, which also envisages the future possible construction of weapons.

That choice for the ultracentrifugal method, adds that specialist, was taken and later reinforced after it was ascertained that the "jet-nozzle"(centrifugal jet) process, the technology of which the country is purchasing from Germany, was not being endorsed. Thus far, that technology has shown to be feasible only on a pilot scale because commercially it requires more energy to the uranium than it will generate in a plant.

Once the plan put into effect, the strategic-administrative concept also determined a differentiation of responsibilities: NUCLEBRAS would keep only the activities pertaining to the binational (electric) program, and the CNEN would be responsible for the alternative research. The decisive step not yet completed in the formation of a bibliography regarding the ultracentrifugation process, the stage of which began with the dismantling of old equipment of that type to learn its mechanical principle. Those units purchased 30 years ago during the Dutra administration were being kept at the Technological Research Institute (IPT).

The project is considered "classified" (secret) but IPEN directors revealed last week that experts from the new processes department, together with specialists from the chemical engineering division have already completed the preliminary phase of comparing the pieces of that equipment with the designs of more advanced equipment of that type. All of that effort is necessary since that technology is for sale by the countries that have it.

Philosophy

The alternative atomic project was conceived without foreseeing the current revision of the Brazilian Nuclear Program but, according to the NUCLEBRAS director, work for this year will continue at its regular pace because the appropriations have not been cut or even frozen.

In addition to confirming the existence of the project, Minister Cesar Cals defended the right of the country to research all existing nuclear technological areas without that representing a conflict with the Brazilian-German agreement but an alternative to the processes that are being established by NUCLEBRAS.

He then stressed that "the program we are establishing with German partners has strictly commercial aims, and the second is alternative, independent. He revealed also that parallel with the ultracentrifugation research, the CNEN is going to research the technology of enriching uranium with laser rays.

According to the NUCLEBRAS source, the project will have a final cost of around $100 million. Concluding, he warns that the project may suffer the same hitches as the Brazilian-German nuclear program, if its philosophy leads to a centralization of research, again separating the scientific community from the process.

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CSO: 5100/2039

BRIEFS

ACCORDS WITH ITALY, FRANCE--Brasilia--The successor to Nogueira Batista [as president of the Brazilian Nuclear Corporation (NUCLEBRAS)], a quiet, technical man, granted a press interview after a period of 1 hour during which he received the congratulations of the people who filled the minister's office. Dario Gomes explained that "the company will honor all the commitments assumed by the previous administration." He pledged that "there will not be any break in the program." He observed, however, that "in view of the economic difficulties the country is going through, all projects will be adapted to the availability of funds." Dario Gomes pledged that Brazil will fulfil the agreement with Germany and pointed out that this agreement is part of the Brazilian nuclear program. There are other agreements signed by Brazil with various countries, such as Italy, which provides for studies on the use of sodium for cooling fast-breeder reactors; and with France, for the production of uranium hexaflouride. Despite the emphasis he placed on the need to adapt the projects to the shortage of funds, Dario Gomes confirmed the dates scheduled for the entry into operation of the nuclear plants: Angra-II, in 1988; Angra-III, in 1990 and Iguape-I and II, in 1992 and 1993, respectively. Work on those two plants will begin at the end of 1984. He revealed also that the factory for the enrichment of uranium utilizing the jet-nozzle method and the uranium reprocessing factory will be ready next year. [Excerpt] [Sao Paulo O ESTADO DE SAO PAULO in Portuguese 17 Feb 83 p 28] 8711

CSO: 5100/2042

NUCLEAR INSTITUTE DIRECTOR DISCUSSES URANIUM

PA142325 Bogota Domestic Service in Spanish 1730 GMT 14 Feb 83

[Excerpts] President Belisario Betancur has signed Law No 7 which approves a cooperation agreement between Colombia and the United States dealing with the peaceful use of nuclear energy.

Ernesto Villarreal, director of the Nuclear Affairs Institute, has said that with this agreement Colombia will be able to acquire uranium for its small nuclear reactor, purchase new equipment for the peaceful use of this type of energy, train experts and receive assistance from U.S. experts.

This agreement--which has been ratified by law--replaces a previous agreement that the two governments signed in the 1960's, which had expired.

[Begin recording] [Question] Does this mean that the Colombian Government maintains its interest in developing nuclear energy for peaceful use in Colombia?

[Villarreal] Yes, I think that the fact that we already have an agreement with Argentina, and that the president has signed a new law ratifying the cooperation agreement with the United States, means that our country is interested in continuing with peaceful programs for the use of nuclear energy.

[Question] There has been much talk about the possibility that uranium can be found in Colombia. What does the Nuclear Affairs Institute know about this?

[Villarreal] The search for uranium in Colombia continues. However, at this time we cannot talk about quantities of reserves, at least not in the economic sense, because uranium has been discovered only in recent years. We know that the country has an important amount of this mineral, but quantifying it and determining whether or not its exploitation is profitable will require additional work. We think that only toward the end of this decade will we be able to talk about exploitable deposits here in Colombia. [End recording]

CSO: 5100/2038

UWI TO GET SMALL NUCLEAR REACTOR FROM CANADA

FL122020 Bridgetown CANA in English 1903 GMT 12 Feb 83

[Text] Kingston, Jamaica, 12 Feb (CANA)--A diplomatic exchange between Jamaica and Canada has cleared the way for the acquisition by the University of the West Indies (UWI) of a small Canadian nuclear reactor for teaching and research, the Foreign Ministry here said today.

The exchange of diplomatic notes between the Foreign Ministry and the Canadian High Commission here was necessary for the sensitive equipment to be transferred to theUWI Mona Campus here, the ministry pointed out.

The reactor, known as Slowpoke 11 (safe low power critical experiment) is among the smallest and simplest available, and is designed specifically for use in universities, hospitals and research centers.

Six of the type, the Foreign Ministry said, are in operation in Canada and this will be the first in the Caribbean.

Funding for the reactor by the UWI was obtained from the European Economic Community (EEC), and the International Atomic Energy Agency is providing technical assistance in association with the nuclear centre being established at Mona.

Jamaica is providing much of the capital cost for the laboratories and offices at the centre, the Foreign Ministry said.

The nuclear reactor is to be used widely here in geological surveys and Jamaica's search for minerals.

Jamiaica is a signatory to the treaty on the non-proliferation of nuclear weapons.

The nuclear reactor here will be operated in accordance with agreements between Jamaica and the International Atomic Energy Agency.

CSO: 5100/2041

BRIEFS

NUCLEAR REACTOR PLANS--The visiting former British Foreign Secretary and the Chairman of General Electric Company Lord Carrington called on the DCMLA and Minister for Energy and Mineral Resources Air Vice-Marshal Sultan Mahmud at his office in Dhaka on Monday, reports BSS. He discussed with the DCMLA about the possibility of further augmenting the generation source in Bangladesh in cooperation with the government of UK and GEC. Lord Carrington showed keen interest to assist in completing the work of 3 mw nuclear reactor unit at Savar. Air Vice-Marshal Sultan Mahmud expressed his satisfaction over the timely completion of work of 60 mw gas turbine generator by GEC which is the first phase of the 90 mw combined cycle power plant of Ashugani. The British High Commissioner in Dhaka, Mr Frank Mills was present on the occasion. [Text] [Dhaka THE BANGLADESH OBSERVER in English 1 Feb 83 p 1]

CSO: 5100/7059

BOARD OF DIRECTORS OF ATOMIC ENERGY COMMISSION FORMED BY DECREE

Cairo AL-JARIDAH AL-RASMIYAH [The Official Gazette] in Arabic No 4, 27 Jan 83 pp 166-167

[Decree No 65 for 1983 of Egypt's Prime Minister on Reorganizing the Board of Directors of the Atomic Energy Commission]

[Text] The Prime Minister:

After examining the constitution;

After examining Presidential Decree Number 288 for 1957 establishing the Atomic Energy Commission;

After examining Presidential Decree Number 195 for 1977 regarding some provisions pertaining to the Atomic Energy Commission;

After examining Presidential Decree Number 503 for 1977 regarding the fact that the Atomic Energy Commission is subordinate to the Minister of Electricity and Energy;

After examining Presidential Decree number 430 for 1982 delegating some powers to the prime minister;

After examining the prime minister's Decree number 1044 for 1979 reorganizing the board of directors of the Atomic Energy Commission;

And after examining the deputy prime minister's Decree Number 1928 for 1980 appointing the president of the board of directors of the Atomic Energy Commission;

[The following] is decreed:

Article One: The board of directors of the Atomic Energy Commission is to be reorganized under the chairmanship of Dr Ibrahim Fathi Hammudah. [The other] members of the board are:

Dr Salah al-Din al-Sayyid Hashish, vice president of the board of directors of the Atomic Energy Commission.

Dr Hamid Rushdi al-Qadi, president of the National Center on Radiation Research and Technology at the Atomic Energy Commission.

Dr Muhammad 'Izzat 'Abd-al-'Aziz, president of the Nuclear Research Center at the Atomic Energy Commission.

Dr 'Abd-al-Rasul Ahmad 'Abd-al-Rasul, hot laboratory chief at the Atomic Energy Commission.

Engineer Amin al-Khashshab, secretary general of the Atomic Energy Commission.

Dr Fawzi Husayn Hamad, chairman of the Nuclear Safety Committee at the Atomic Energy Commission.

Professor Faraj Hafiz al-Durri, legal adviser to the Atomic Energy Commission.

Dr Muhammad 'Abd-al-Maqsud al-Nadi, professor in the College of Science at Cairo University.

A representative from each one of [the following] ministries: electricity and energy, health, finance, planning, education, scientific research and defense. Said representative is to be chosen by the authorized minister.

A representative from the Nuclear Power Stations Authority and from the Nuclear Materials Authority to be selected by the authorized minister.

Article Two: This decree is to be published in AL-JARIDAH AL-RASMIYAH [The Official Gazette].

Issued at the office of the prime minister on 3 Rabi' al-Aakhar 1403 [Hegira] (17 January 1983).

Dr Fu'ad Muhi al-Din

8592
CSO: 5100/4603

AEC UNLIKELY TO ACHIEVE NUCLEAR POWER TARGETS

Calcutta THE STATESMAN in English 25 Jan 83 p 6

[Editorial]

[Text]

THE Atomic Energy Department's proposal to set up eight more nuclear power plants is presumably part of its plan for a total capacity of 10,000 MW by the end of the century, by which time the Tarapur station will probably have been decommissioned. Judging by the progress with the projects in hand, this ambitious target is extremely unlikely to be achieved. Not only has the construction of the two plants at Kalpakkam in Madras and at Narora in Uttar Pradesh fallen far behind schedule, even the two in operation seem to be constantly in trouble. Tarapur's problems are well known; but even the plant at Rana Pratap Sagar in Rajasthan has been plagued by a series of difficulties, though of a different kind. One of its two units has been closed since March because of a leak in an "end-shield" about which little has been disclosed, and the other had to be shut down at least twice last year because of various technical defects. No wonder that its capacity utilization has been persistently unsatisfactory.

The heavy water plants at Tuticorin, Baroda and Nangal have fared no better, and their output is critically important for the Indian nuclear power programme. The Minister of State for Atomic Energy admitted in Parliament last year that the country was experiencing a "tremendous shortage" of heavy water and that a part of the requirement had to be met through imports from the Soviet Union. If the shortfall persists, the scheduled commissioning of the first unit at Kalpakkam later this year (more than 99% of the work is now said to be complete after years of delay) may be further postponed. The plan for setting up five more heavy water plants is intended to remove this shortage, but no one can be sure what will be achieved or how soon.

If four power plants at Tarapur, Rana Pratap Sagar Kalpakkam and Narora are in operation by the end of this decade, the installed capacity will be less than 1,800 MW, nearly 1,000 MW less than the capacity originally envisaged for the beginning of the decade. Depressing as it is, this gap between projections and actual growth would not have mattered so much if the power stations had at least maintained a high generation rate. But as in the conventional power sector, atomic power planners seem to accomplish more on paper than in practice. Before advertising ambitious plans for new nuclear power stations, they might be well advised to wait for the commissioning of the Kalpakkam and Narora plants and see whether the right lessons have been learnt from the difficulties experienced so far.

CSO: 5100/7056

'HINDU' ANALYST DISCUSSES IAEA MEETING

Madras THE HINDU in English 3 Feb 83 p 9

[Article by G.K. Reddy]

[Text]

NEW DELHI, Feb. 2.

The Board of Governors of the International Atomic Energy Agency (IAEA) will meet in Vienna in the last week of this month to consider the alternative fuel arrangements made by India, with France substituting the U.S. as supplier of enriched uranium, during the remaining 10 years of the 1963 Indo-American agreement.

But so far, only the U.S. has notified the IAEA about the alternative arrangements in terms of the diplomatic notes it had exchanged with India on November 30, 1982, following the conclusion of an agreement between India and France on the subject.

The U.S. has done so under its trilateral obligation, arising from the joint agreement signed by India and the U.S. with the IAEA on January 27, 1971, empowering the Agency to perform the safeguard functions at Tarapur in terms of the 1963 Indo-American agreement. But neither India nor France has considered it necessary to formally inform the IAEA of the substitute arrangement.

During his visit to Delhi in December last, the IAEA Director-General, Dr. Hans Blix, said that until such a reference was made by the governments concerned, the Agency could not indicate its response to the new fuel supply arrangement. He did not indicate that the IAEA would object to the substitution, although he seemed to imply that it would have to carefully examine the implications.

Unhappiness: Dr. Blix, however, conceded that as a service agency the IAEA was not competent to question the propriety of making alternative fuel supply arrangements on the basis of the old safeguards within the framework of the 1963 agreement. But he made no secret of his unhappiness over the conclusion of this new arrangement, without consultation with the IAEA.

It remains to be seen what stand the IAEA Board of Governors would take with a member of the nuclear suppliers group accepting this responsibility to act as a substitute fuel supplier under the old agreement, without insisting on the application of the updated safeguards as part of the collective obligation to invoke both the pursuit and perpetuity clauses. The Board's attitude will be determined largely by the stand the U.S. takes during the discussion, whether it goes along with India and France in maintaining that the mere substitution of the supplier under an old agreement need not necessarily attract more stringent safeguards provisions.

The diplomtic notes exchanged by India and the U.S. on November 30 confirming the new fuel supply arrangement specifically mention that the trilateral agreement signed with the IAEA will remain in force during the reminder of the 30-year agreement. It clearly means that the same level of safeguards that were agreed upon in 1971 would continue to apply even after the substitution.

There is, however, a grey zone in the three-paragraph agreement signed by India and France on November 27 last which says that the two countries would consult during the life of the 1963 Indo-U.S. agreement on arrangements to ensure the implementation of its provisions, that is, the nuclear material supplied by France and the by-products derived from it would continue to be used for peaceful purposes. The implication is that India has an obligation to respect this commitment even after the expiry of the 1963 agreement.

CSO: 5100/7057

RADIATION HAZARD FROM TROMBAY PLANT MINIMAL

New Delhi PATRIOT in English 20 Jan 83 p 2

[Text]

Trombay fishermen are not exposed to any radiation hazard from nuclear wastes discharged into the bay, says a study by two health physicists of the Bhabha Atomic Research Centre (BARC), reports PTI.

The study by Dr P Patel and Dr S Patel claims to have analysed the effects of radioactive elements discharged into the bay by the Trombay atomic facilities during the last two decades. It says that even extremely contaminated fish caught in the bay is safe to eat.

Reporting their findings in the bulletin of radiation protection they said the radiation dose to fishermen "is much below the permissible limit" even after considering "the extreme conditions of contamination observed to this date."

The study said that levels of toxic plutonium-239 in the sediments "were extremely low" and hence this cannot pose "inhalation hazards during fishing".

The exposure through operating fishing gear is insignificant 'since the levels of these radioactive nuclides are extremely low over the fishing zone' the study said.

Fishing on the soft clam bed off the discharge zone (where the highest ardioactivity was recorded in 1971) will expose the fishermen to less than one-third of the recommended radiation dose, it is claimed.

The study found very little radioactive contamination in salt, and fishes harvested from the bay. So the uptake of radioactivity by consuming 15 grams of salt and 50 grams of meat of extremely contaminated shellfish caught in the bay will still be less than 2.3 per cent of the limiting value, it said.

According to the study water, salt, silt and sediment up to 100 km from the discharge zone have been monitored since 1967.

The bay where the nuclear wastes are discharged yields about 2300 tonnes of fish annually, including, the Bombay duck and blood clam (A. Granosa), which has a specific affinity for radioactive elements in the discharged waste.

Maximum contamination was observed in fish caught from an area within 1 km from discharge zone, according to the study.

It said that sources of nuclear wastes in Trombay are the Cirus and Apsara reactors, a radio isotope laboratory and a fuel processing plant.

The wastes are diluted and mixed with 45 million litres of sea water before being released to the bay. The major radioactive elements in the wastes are Cesium-137, Strontium-90 and Ruthenium-106, the report said.

According to the scientists the findings showed that the bay environment was able to decontaminate itself and hence more wastes could actually be dumped into the sea without affecting the environment.

CSO: 5100/7055

BRIEFS

KOTA NUCLEAR PLANT--Kota, January 28 (PTI)--The second unit of the Rajasthan atomic power project which was commissioned only recently tripped and stopped generation yesterday. The unit was generating 205 Mw of power. [Text] [Bombay THE TIMES OF INDIA in English 29 Jan 83 p 9]

CSO: 5100/7058

UNITED STATES' BIAS TOWARD INDIA CRITICIZED

Karachi NAWA-I-WAQT in Urdu 1 Mar 83 international edition p 3

[Editorial: "Mr America's Double Standards"]

[Excerpts] The U.S. State Department assistant secretary for Asian affairs [title as printed], Mr (Schaeffer), told the Congressional Foreign Relations Committee that investigations by "the CIA" have discovered "concrete evidence" that the PRC is assisting Pakistan in the manufacture of nuclear arms. But when a committee member questioned him on India's nuclear program, especially the manufacture of plutonium by reprocessing spent atomic fuel, Mr Schaeffer replied that the Indian program is open and aboveboard and that Mrs Bandhi says that the plutonium will be used for nonmilitary purposes and not for the manufacture of weapons.

Mr Schaeffer's reply is an obvious example of the double standard adopted by Mr America with regard to Islamic and other countries, especially Pakistan due to the influence of the Zionist lobby. Mr Schaeffer's logic means, in simple words that Pakistan's plan is covert and is being clandestinely aided by the PRC, while India is overtly carrying out its program and therefore it is being supplied a nuclear plant and fuel by the United States. Then why is it that President Ziaul Haq's assurances that Pakistan's limited nuclear program is for peaceful purposes but Mrs Gandhi, whose country has already staged a nuclear explosion, is believed when she says that the plutonium, which is being manufactured and is used in making nuclear weapons, will be used for nonmilitary purposes. [Passage on similar double standards of Carter and Kennedy administrations omitted.]

It should be noted that the long-term plan formulated by the United States for the sale of arms and giving of economic aid to Pakistan is also on the condition that Pakistan will not manufacture nuclear arms. Despite this stringent and very explicit condition, constant suspicion and direct accusations about Pakistan's nuclear program are most inappropriate and degrading for a country like the United States which is also a superpower. Regarding India, the U.S. experts and advisers say that it is in the forefront of all the third world countries, but the implications of this are brushed aside on the assurances by Mrs Gandhi, but Pakistan's limited program has been labeled "clandestine" and "concrete evidence" has been

"uncovered." Such statements are not becoming of a person like Mr. Schaeffer.

U.S. and Western circles malign very quickly Pakistan's statements to the extent that they have become schizophrenic in their denigration of its nuclear program because they cannot tolerate the fact that the Islamic world should gain access to new sources of energy through nuclear technology. The utterances of Mr Schaeffer that Pakistan's nuclear plan is not acceptable while India's plan is acceptable are evidence of this attitude of the United States.

CSO: 5100/4705

ISRAELI-INDIAN 'CONSPIRACY' AGAINST NUCLEAR INSTALLATIONS REVEALED

Lahore NAWA-I-WAQT in Urdu 4 Jan 83 p 10

[Editorial: "Israeli-Indian Threat"]

[Text] The British newspaper OBSERVER's special representative of Indian descent, stationed in London on his return from a recent visit to India, has disclosed that an Israeli-Indian conspiracy with regard to Pakistan's nuclear installations has been readied. According to this report, India asked Israel whether the operation Israel used to destroy nuclear installations in Iraq was ready for Pakistan. It is reported that Israel expressed its willingness and said that if facilities were available for refueling its planes at an air base near Pakistan, it would implement this operation. According to the report, India proposed the Jampur airport. It may be stated here that Israel after destroying the Iraqi nuclear installations had threatened that it would destroy the atomic installations in all Muslim and Arab countries, including Pakistan, engaged in the acquisition of atomic capabilities and which threaten Israel. Similar threats were made by India, too. At the time, the president declared that "we have taken all necessary precautionary measures and anyone taking such a foolish action will be given an exemplary lesson."

Now if, on the one hand, Mr Subramaniam has disclosed the Israeli-Indian conspiracy against Pakistan and on the other hand a correspondent of Indian descent has published it, then it can be concluded that this deliberate attention is meant as a warning for Pakistan. At present, 46 countries have atomic capabilities, there are 800 atomic reactors in use in many countries and 6 countries including India have exploded atomic devices. What is surprising is that despite all this, why are the U.S. pet country, Israel, and the Russian satellite, India, interested in Pakistan alone? Is it because Pakistan is a Muslim country and wants to acquire atomic capability for peaceful purposes only?

We hope that the Government of Pakistan will take the necessary precautions, as it has already declared, and will give this report the importance it deserves. Should India or Israel or both of them dare to carry out their threat, then Pakistan should be prepared to teach it or them the lesson befitting the Pakistani nation and a warning to the evil eye.

9315
CSO: 5100/4324

BRIEFS

KOEBERG CONSTRUCTION PRICE--The original total contract price for the construction of the Koeberg nuclear power station was R1 285-million, the Minister of Mineral and Energy Affairs, Mr P T C du Plessis said yesterday. Replying to a question by Mr R R Hulley (PFP, Constantia), the Minister said the estimated cost of the project in 1983 money terms would be R1 819-million. "This estimate does not include escalation costs from 1983 until the completion of the project. "The cost of the recent damage still needs to be quantified and will depend amongst other things on insurance payments and the delay in the commissioning of the power station." [Text] [Johannesburg THE CITIZEN in English 17 Feb 83 p 4]

KOEBERG EXPLOSIONS--No unexploded devices were found at the Koeberg nuclear power installation before, during or after the recent explosions there, the Minister of Mineral and Energy Affairs, Mr Pietie du Plessis, said yesterday. He was replying to a question by Mr John Malcomess (PFP, Port Elizabeth Central). Mr Du Plessis said the containment building of unit one had been classified as a controlled area before the explosions and that an average of 450 employees of the contractor had had access to it. "The containment building of unit two was, however, not classified as a controlled area and on average 4 400 employees of the contractor had access to it." Security clearance on the backgrounds of these contract personnel had been obtained from the applicable Government departments. "However, as a result of the high turnover of certain categories of locally recruited employees, this was not always possible in their cases." Mr Du Plessis said security checks were carried out whenever such members of the contract personnel entered the containment buildings. [Text] [Johannesburg THE CITIZEN in English 10 Feb 83 p 4]

ELECTRICAL FAULT AT KOEBERG--An electrical fault caused the fire at the Koeberg nuclear power station during July 1982 and the cost of the damage was R250 000, the Minister of Mineral and Energy Affairs, Mr Pietie du Plessis said yesterday. He was replying to a question by Mr Roger Hully (PFP, Constantia). Mr Du Plessis said revised working and maintenance procedures had been introduced as recommended by the board of inquiry and that Escom's insurers and the contractor would bear the cost of repairing the damage. [Text] [Johannesburg THE CITIZEN in English 10 Feb 83 p 4]

POSSESSING URANIUM--A man found guilty of possessing 5,21 kg of uranium has been fined R2 000 (or one years' imprisonment) in the Windhoek Magistrate's Court. Richard Ujaha (29), pleaded guilty to illegal possession of the uranium. He was also sentenced to two years' imprisonment, suspended for five years. The magistrate told Ujaha there were terrorist activities in the country and that inhabitants could have been exposed to grave dangers--had the uranium fallen into the wrong hands.--Sapa. [Text] [Johannesburg THE CITIZEN in English 10 Feb 83 p 11]

KOEBERG EMERGENCY PLAN--Sirens and loud hailers will be used to alert people if a serious accident occurs at the Koeberg nuclear power station. And normal programmes on all SABC radio chennels serving the Koeberg area will be interrupted, says an article in the latest edition of National Safety. In terms of Escom's emergency plan, sirens will alert people living within the danger zone--a 5 km radius around Koeberg--while those outside the 5 km range will be alerted by the police or emergency workers using loud hailers. Safety precautions in the event of a serious accident include: • Take shelter, go indoors and close all windows and doors, turn off any fans or air conditioners and cover up airbricks or other ventilation holes. • Take suitable iodine tablets which will minimise the retention of radio-iodine in the body. • Lock houses and turn off all appliances. • Listen to the radio and follow instructions. The Escom emergency plan recommends that people: • Stay tuned to the SABC for further information. • Do not use telephones except in cases of emergency. • Give neighbours a knock on the door to help spread the word. [Text] [Johannesburg THE STAR in English 9 Feb 83 p 3M]

FIRE AT PELINDABA--AN investigation has been launched into a fire that broke out on a Wednesday night in a building at the nuclear research station at Pelindaba near Pretoria, a spokesman for the Atomic Energy Corporation said yesterday. In the meantime, the corporation has imposed a clampdown on details of the blaze. "We can only confirm that there was a fire in one building and that it was brought under control."Other than that, no further information will be released until the investigation has been completed. And there is no indication when that will be", the AEC spokesman said. Newspaper reports said four municipal fire engines, a number of police cars and an ambulance were called to the scene of the fire late on Wednesday night. There were no reports of casualties and officials on the scene reportedly told newsmen, who were barred entry to the centre, that the fire was not serious. [Text] [Johannesburg THE CITIZEN in English 25 Feb 83 p 5]

CSO: 5100/24

SWEDEN'S NUCLEAR INSPECTORATE CHIEF: HALT SHIPPING WASTE TO UK, FRANCE

Stockholm DAGENS NYHETER in Swedish 11 Feb 83 p 12

[Article by Ingemar Lofgren]

[Text] "Bring home Swedish nuclear waste from France and England." This was suggested by Lars Nordstrom, general director of SKI (Swedish Atomic Energy Board). According to Nordstrom, the Swedish waste could be used to spread nuclear weapons, despite the government's guarantees. Instead of reprocessing the waste abroad, we should store it in Sweden, he said.

The general director of SKI has two reasons for expressing these fears.

"I am reacting against transport to various places and the danger of the spread of nuclear weapons," Lars Nordstrom told DAGENS NYHETER.

With regard to transports, Nordstrom points to the dangers that can arise after the actual reprocessing. The uranium and plutonium then are transported to various fuel factories at secret destinations. This uranium and plutonium probably is transported over highways, Lars Nordstrom said.

With regard to the spread of nuclear weapons in the world, Lars Nordstrom doubts that the international control organ IAEA (International Atomic Energy Agency) actually is capable of preventing the spread.

"If we have an arms race such as we had during the thirties, I believe all multinational and bilateral agreements will be ignored," Nordstrom said.

"I also am fearful of the situation we have today. I am seriously disturbed by the tense situation and the politization of IAEA."

The United Nations organ IAEA consists of about 110 member nations, is located in Vienna, Austria, and one of its tasks is to see that plutonium is not concealed and used for nuclear weapons.

The head of IAEA in Vienna is Hans Blix. His closest coworker is Johan Molander. He shares some of Lars Nordstrom's concerns.

"Some countries are bringing political problems into the organization that have

nothing to do with IAEA. We are not immune to this, however, and we have been 'infected' by political demonstrations."

"We can monitor what is occurring today, but we cannot physically prevent various countries from obtaining nuclear weapons in the future. It is possible that they may ignore all the agreements," Johan Molander said.

An IAEA board meeting will be held on 21 February. Many fear that the organization will be weakened now that the United States has threatened to boycott future meetings because of a demonstration against Israel by Arab and other nations last fall.

Johan Molander is convinced, however, that the United States will attend the meeting and that IAEA can continue its role as internations monitor.

It is against the background of nuclear proliferation and the transport of nuclear materials, however, that Lars Nordstrom has expressed his personal opinion that Sweden's nuclear waste should be sent back to Sweden for direct deposition.

"Home 1990 At The Latest"

"Reprocessing is a difficult technology. Direct storage, on the other hand, is a much simpler process. Handling is controled in a different manner. The cost of handling the waste and the cost of permitting it to spread simply would be much lower."

At present, 140 tons spent nuclear fuel from Sweden is stored at Windscale, England. It is waiting there to be reprocessed--no one knows when. In addition, there is no guarantee as to how it will be used. The nuclear waste ship Sigyn recently carried 6 tons spent nuclear waste for reprocessing in Le Hague, France.

"I am not saying that Sweden should send immediately for the fuel that has been shipped to France and England, but I would like to see this happen within a 10-year period--by 1990 at the latest," Nordstrom said.

On 18 February the parties in parliament, probably all five, will meet to discuss how to deal with Sweden's nuclear waste in the future.

9336
CSO: 5100/2560

FINLAND WANTS TO BURY ITS NUCLEAR WASTE IN SWEDEN'S ROCK

Stockholm SVENSKA DAGBLADET in Swedish 7 Feb 83 p 6

[Article by Bo Ostlund]

[Text] Finland has asked Sweden to store spent Finnish nuclear fuel. If Sweden agrees to accept the Finnish waste it will be deposited at Clab, the central waste storage facility near Oskarshamn.

The Finnish inquiries have not occurred on the diplomatic level, but the Finnish power company that owns both the Swedish-manufactured boiling water reactors in Olkiluoto has turned to SKBF (Swedish Nuclear Fuel Supply Company).

The Finns have not yet made a decision on the waste question and it also has been suggested that Finnland build a Clab, i.e. a waste storage facility, of its own.

Finland's nuclear power program consists of two entirely separate parts--a Swedish section and a Soviet section.

The Swedish section includes the two boiling water reactors in Olkiluoto built by Asea. Asea-Atom also is responsible for fuel production and as recently as last Thursday the Swedish government decided to permit Asea-Atom to export additional uranium fuel to Finland.

Open Question

Thus, what Finland will do about final storage of the waste from Olkiluoto remains an open question. The issue is not yet acute for Finland. There still is room for storage at the power plant.

The waste problem in the Soviet section of the nuclear power program is already solved. Finland's contract with the Soviet Union is similar to the arrangement the Soviet Union has with all its nuclear power customers in Eastern Europe: the Soviet Union supplies the reactor technology and the fuel and disposes of the waste. Waste from the two Soviet-built nuclear reactors in Lovisa already has been shipped back to the Soviet Union.

These shipments are totally open. On a cold fall day sizzling hot steam was seen rising from warm containers of spent fuel from the pressurized water reactors as railroad cars rolled eastward through the rain.

What the Soviet Union does with the spent fuel is an internal Soviet issue. If the Soviet Union wishes, it can use the plutonium from the waste to produce nuclear weapons or use the waste in its advanced breeder technology, i.e. a plutonium reactor that produces (breeds) usable uranium as "waste."

The uranium permitted by Thursday's government decision to be sent from Sweden to the boiling water reactors in Olkiluoto is covered by the nonproliferation agreement signed by all four parties involved in the Swedish sector of the Finnish nuclear power program: Canada, which produced the uranium and owns it, the United States, which enriched it, Sweden, which produced the fuel elements, and Finland, which owns the reactors.

According to the nonproliferation agreement, all parties involved are obliged to help maintain "safeguard control," i.e. the uranium and the waste cannot be delivered to an outside party without permission from the owner of the enriched uranium--in this case Canada and the United States.

"Positive Cooperation"

The IAEA (International Atomic Energy Agency), the United Nations international organ for nuclear energy, has discussed cooperation on waste problems. Here cooperation such as that between Finland and Sweden has been seen as something positive.

The alternative is for each individual country--30 nations now have nuclear power and the figure is growing steadily--with differing economic, safety, geological, etc., conditions, to attempt to solve its own waste problems--with a greater or lesser degree of success.

9336
CSO: 5100/2560

PROBLEMS, ADVANTAGES OF RECYCLING NUCLEAR FUEL WEIGHED

Brussels LE SOIR in French 31 Jan 83 p 2

[Article: "Belgium To Recycle Nuclear Fuel"]

[Text] The energy debate, that eternal Loch Ness monster, is finally coming to an end. The House completed its work last June. The Senate committee has just finished its work, and the discussions in public session are expected to start in mid-February in the Senate. From all those lengthy debates, a very important decision can be noted: Belgium will once again begin reprocessing irradiated nuclear fuel. It will reopen and expand the "Eurochimic" plant located in Dessel, in Campine. In plain language, plutonium will be separated from the other nuclear waste.

This decision is significant on two accounts: Belgium thus becomes the second country, after France, to embark boldly on semi-industrial reprocessing. The United States and the FRG are still hesitating. On the other hand, this was the only firm decision the members of parliament had to make. As a matter of fact, the law of 9 August 1980 specified that only an energy debate in parliament could give the "green light" to reprocessing in Belgium.

This decision has already aroused a sharp controversy. And the secretary of state for energy, Etienne Knoops, could not resist his inclination for "provocative" statements when he answered curtly that "to support the reprocessing of nuclear fuel boils down to being more ecology minded than the ecologists themselves, and that this was an example of rational use of energy." But things are not that simple.

The advantages of reprocessing are well known. By 1986, for example, the Belgian nuclear power plants will produce 150 tons of spent fuel per year. The reprocessing then consists of processing in such a way as to separate the main elements of this fuel. What is recovered is uranium and plutonium, which can then be recycled in traditional nuclear reactors or in breeder reactors. Hence, this would mean a savings of energy and of foreign currency, what Mr Knoops calls "the rational use of energy."

The second advantage is to separate from the irradiated fuel, the most dangerous radioactive products, thus to reduce the volume of waste and to facilitate the problem of its final storage; this is what Mr Knoops calls the ecological aspect of reprocessing.

But, aside from these advantages, there are disadvantages. The reprocessing of the fuel does not present any theoretical difficulties, but it is a "dirty," dangerous operation. In addition, it extracts plutonium from the fuel, and then there is the possible risk of part of that plutonium being stolen by terrorists eager to build themselves a small nuclear bomb. This is the "nuclear arms proliferation" aspect of reprocessing.

Reprocessing is also an open door to the breeder reactor, which is -- virtually -- the only one able to use the plutonium produced. Finally, the economic value of the operation has not been proven.

The "Eurochimic" plant operated in Dessel from 1966 until 1974. Since then, it has stopped and been mothballed. To start it up again will cost 15 billion Belgian francs, estimates Mr Knoops. Nearly double that figure, respond the opponents. The experience of the French reprocessing plant in La Hague has demonstrated the difficulty of the operation, the low level of reliability of the plants and the higher than expected costs. The recovered uranium remains too expensive and there is not yet a real market and a real price for plutonium.

All these problems have caused the large majority of Western countries to hesitate, in spite of the enormous problem posed by the irradiated nuclear fuel. By the year 2000, there will be a worldwide stockpile of 200,000 tons of irradiated fuel in storage; generally speaking, in cooling ponds while awaiting a solution.

Belgium has already signed a very expensive contract with the La Hague plant for the reprocessing of 500 tons of fuel. The report of the "wise men" recommended that further reprocessing of the fuel be done in our country, by Eurochimic, and parliament said the same thing.

Thus, the current Eurochimic plant would see its capacity doubled, going from 60 tons per year to 120 tons per year. It would essentially process "special" fuels, that is to say fuel from test reactors, but also, they say, fuel from breeder reactors. Finally, it is not excluded that foreign capital may finance at least partially the work at Eurochimic. The role of Eurochimic would thus be international, and would become integrated into a kind of division of labor among European countries. We would have our fuel reprocessed at La Hague, and in exchange we would reprocess some of the foreign fuel.

Is there a way to do it differently? Many voices, particularly in the United States and Sweden, suggest the "once through cycle." The fuel would not be reprocessed. One would be content with burying the whole thing at great depths. No more problems of nuclear proliferation then, and a lower cost.

The French government asked a committee, headed by Professor Castaing, to study the problem of reprocessing. The committee's conclusions were qualified. It believes that the problem has not been solved yet. It proposed, simultaneously, that the policy of immediate reprocessing, which has been started, be continued and that a thorough study be carried out of the other option, the "once through cycle."

Hence, the problems in matters of reprocessing are far from having all been settled, and uncertainty remains. To reopen "Eurochimic" is justified in order to keep up with the latest techniques, but to expand the capacity of the plant and to turn Belgium into a reprocessing center is another matter altogether!

8463
CSO: 5100/2556

REPROCESSING FACILITIES IN LOWER SAXONY, BAVARIA PLANNED

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 29 Jan 83 p 10

[Article by Klaus Broichhausen: "Two Irons in the Fire for Nuclear Waste Disposal"]

[Text] Gorleben, January--In Hannover's Wendland unrest breaks out again. In this border area on the Elbe, known as the rural kreis of Luechow-Dannenberg, resistance is being organized anew against a nuclear power plant which is to reprocess used fuel elements from light-water reactors. During the reprocessing, a chemical process, usuable nuclear fuel and nuclear waste are separated. Originally a facility for reprocessing burned-out nuclear fuel rods was to be built in the Wendland community of Gorleben over the salt mine, which was planned to be used as a depositary for radioactive waste. Investigations are continuing to determine whether the Gorleben salt mine is suitable for storing nuclear waste. A large hall is also under construction in Gorleben which is to be used to store burned-out fuel rods until they can be disposed of permanently. Lower-Saxony's Minister-President Albrecht, however, declared that no reprocessing facility will be built in Gorleben under any circumstances.

But Albrecht caused surprise within his own ranks when he gave his approval at the end of the year for testing an alternate site for a reprocessing facility: It is only 40 kilometers from Gorleben, at the edge of the state forest of Goehrde, which is also located in the kreis of Luechow-Dannenberg. In the past the impression existed that the entire rural kreis of Luechow-Dannenberg was not to be considered as a site. The view was based on a letter written by Albrecht in May of 1981 and addressed to Rathje, the major of the community of Gartow. Albrecht's letter said that "the Land government would not approve a possible application for the construction of a reprocessing facility in the rural kreis of Luechow-Dannenberg under any circumstances, no matter who would submit the application." Rathje had asked the Land government to make a binding statement concerning the establishment of a reprocessing plant in the kreis of Luechow-Dannenberg, especially in Gorleben. Now Albrecht is saying--when commenting on his former reply--that the reference to the rural kreis of Luechow-Dannenberg was indeed somewhat imprecise as was the reference to Gorleben. But because of the surrounding circumstances, the intended site could only have been Gorleben and not any other one.

At the present time the Land government is considering the establishment of a facility with an annual reprocessing capacity of 350 tons of uranium, because it would create 1,800 permanent jobs. Such a novel industrial plant could revive the entire economy of the region. Grill, a CDU Landtag deputy, confirmed Albrecht's opinion: "The Kreis needs nuclear-waste disposal facilities. It cannot balance its budget with normal means." Poggendorf, the regional director of the kreis, is counting on the fact that the facility will yield new, additional tax revenues, and he hopes that they will be substantial and ease the financial straits of many communities. Putting the new reprocessing industry in this rural kreis could prevent a further migration of young people from this area because there are no prospects for jobs.

If the economic situation in this border territory had not deteriorated, the nuclear industry would not have had another opportunity of making a new attempt to seek a license for a reprocessing plant. Officially, however, the German Society for Reprocessing Nuclear Fuels--the joint enterprise in the electric-power industry which is responsible for making decisions in this area--has not yet selected an alternate site in Lower Saxony to replace Gorleben. Its new application for the licensing of a reprocessing plant, according to the text, was made without reference to a site. Dragahn, however, should be a handy site as far as the German Economic Commission is concerned, because it has already access to some areas which are the property of the Federal Industrial Administration Agency. The area already houses a "laboratory"; in plain German it means that the facility is used to defuse ammunition from the Bundeswehr.

The search by the reprocessing company for a suitable site remains controversial. Particularly during the last year, politicians of all parties accused the company of causing unnecessary unrest in the country because it wanted to secure reprocessing sites in as many areas as possible. Since their application was denied in Gorleben in 1979, it has been looking at Hesse, Bavaria and in Rhineland-Palatinate. In the meantime two applications have been withdrawan. At the present, Wackersdorf in the Upper Palatinate rural kreis of Schwandorf is the only definite site. The application procedure for this site has progressed fairly well. Investigations into the various aspects of the construction are in progress.

The company says that it has to use this approach when looking for a site, because there is no other way that it could do justice to its mandate of advancing the removal of fuel elements, the so-called disposal of nuclear waste. Salander, a board member, explains that since the setback in Gorleben--if not before--the company has come to the realization that it has to find alternative solutions. What happened before must not happen again; the company does not want to start all over again in case its efforts should fail to secure a prospective site. The fact that two sites are being considered, Wackersdorf and possibly Draghan, means that the company has two irons in the fire for nuclear waste disposal. According to Salander, the decision as to where the first reprocessing facility is to be built depends on the success of the two licensing procedures which are currently under consideration, one here in Bavaria and the other one in Lower Saxony.

Only a few days ago, Zimmermann, the FRG minister of the interior, called attention to the fact that the nuclear waste disposal concept for the FRG and the Laender provides for the construction of only one facility. Consequently the supporters of reprocessing plants in Bavaria and in Lower Saxony are in competition with one another. At the present time the Bavarians are ahead of Lower Saxony when it comes to the licensing procedure. Lower Saxony's Land and local politicians who are in favor of a reprocessing facility must be aware of it. They attracted a great deal of criticism and were personally reviled when a new dispute broke out over the dangers of reprocessing, and the final outcome of their efforts for more jobs in the rural kreis of Luechow-Dannenberg remains uncertain. The Bavarians, on the other hand, are making progress.

8991
CSO: 5100/2553

HERVE ON NUCLEAR WASTE RETREATMENT, FUEL COSTS

Paris L'UNITE in French 21 Jan 83 pp 3-4

[Interview with Edmond Herve, minister delegate to the minister of industry for energy, by Martine Ducousset; date and place not given]

[Text] Nuclear energy is a field with which the French are not very familiar but which they distrust somewhat, probably less than the "ecology freaks," but then, that is not saying much. After all, what happens to the waste produced by the power plants, the radioactive fuel? The Castaing report, ordered by the government in December 1981 and just made public after being examined by the High Council on Nuclear Safety, provides the beginnings of an answer: France has mastered the technique of treating radioactive waste. Edmond Herve, minister of energy, does not conceal his satisfaction over this good mark awarded to the La Hague plant. He is not smug, however, because nuclear energy still poses many problems and as a result, France's energy policy is not reduced to nuclear power. For example, oil represents 48 percent of our energy needs, but its price variations can constitute a real danger, for consumer as well as producer countries. There is oil but there is also the coal industry, which must be protected, gas, whose use demands to be developed, and the new and renewable sources of energy that require urgent promotion. Herve recalls all these aspects of French energy policy, a coherent policy that "corresponds to the objective of independence and sovereignty" pursued by France, and explains them for L'UNITE. Nor does he forget to bring up the EDF [French Electric (Power) Company], on the hotseat recently for poor management.

[Question] In December 1981, the government entrusted Raymond Castaing with the task of drawing up a report on the management of radioactive waste, a report just made public. What lessons can you derive from it?

[Answer] Several points deserve discussion. First of all, the report clearly states that we have mastered -- totally, scientifically, technologically and industrially -- the treatment of radioactive waste. This also means that there is no discrepancy between the requirements of that reprocessing and those imposed by the protection of the environment and the preservation of workers' health. Thanks to this positive result, due to 20 years of efforts, we are therefore going to be able to continue to achieve what we planned, particularly the program for the modernization and expansion of the La Hague plant.

[Question] The Castaing report therefore proves that we have mastered the reprocessing technique. Can we then rest on our laurels?

[Answer] Of course not, and that is another subject for reflection. It is very important for us to continue the research effort into reprocessing. We must master this constantly evolving technology and continue to master it today, tomorrow and the day after tomorrow.

The third point: Some so-called "alpha" waste has a very long lifespan, reckoned in thousands of years. In short- and medium-range terms -- a few hundred years -- this poses no problem: We know that the disposal of such waste presents no major difficulties. Afterwards, it is a complete mystery and we must derive the consequences. There can be no question of bequeathing to future generations, with our eyes closed, a dangerous radioactive heritage. Consequently, there is one essential condition: that the storage of this particular type of waste be watched, controlled, by the hand and intelligence of man. If the researchers discover new and better techniques, then we shall have to take back, retreat and restore this waste kept in the meantime.

[Question] But can one not also imagine the possibility of not treating radioactive waste?

[Answer] That is certainly one possibility not to be neglected, but there must be no confusion on the subject. The reprocessing technology is an old one of which we have complete mastery and for which, for the time being at least, there is no alternative. Perhaps, in 20 or 30 years, we shall be able to make a decision on long-term storage without treatment. That is not the case at present. Research is underway and we shall continue it. Let us wait for the results. But given the present stage of our knowledge, it was important to realize that the solution existing in 1983, one used at La Hague, is a reliable, safe and perfectly mastered solution.

[Question] A previous report, from the National Association for the Management of Radioactive Waste (ANDRA), affirmed the urgent need to set up a second waste storage center and recommended the launching of a research and development program stretching over 10 years. What do you think of these two proposals?

[Answer] The research policy is going well and we shall continue it, but it is a field in which we can neither decree organization nor plan results. As for the second storage plant, it was scheduled, also at La Hague, and it will be operational in 1989. Furthermore, the planned expansion of the existing plant will be a fact in 1987. This expansion and creation were decided upon in terms of our own projected needs for 1995 and also in terms of the contracts we made and have to honor. But these programs are flexible. In this field and elsewhere, absolute precision would be aberrant and could never be respected.

We have a perfectly coherent procedure, a procedure in which foresight and predictability are constantly present, which was far from the case before. Let us not forget that if, today, we have no reprocessing alternative, it is

precisely because, 20 years ago, the authorities at the time decided to emphasize only retreatment. What we want to do is to make decisions on orientation in order to keep options open in 10 or 20 years.

[Question] You mentioned contracts with foreign countries. Do you expect to sign more? In other words, are we moving toward a development of the French reprocessing industry?

[Answer] We have contracts and they will be honored. For the time being, there is no new expansion planned for the La Hague plants and no decision will be made for several years. For the new contracts, we are not systematically determined to make any, but our policy is to act case by case.

[Question] The economic situation we now have is stagnant growth and dropping energy consumption. Confronted with this new situation, should we not reconsider the French nuclear program? Put a halt to the construction of the power plants, for example?

[Answer] It is a question that is posed, one that the Ninth Plan commissions, particularly the energy commission, will try to answer. What we must know is that the nuclear power plants were built in the past in order to respond to a double need: replacing the fuel power plants and satisfying economic growth. It is true that for several years, economic growth has been marking time, but I am not among those who believe that the future must be a mere extension of what is done today. We have a challenge ahead, the battle for employment. But the economic battle can only be based on an assumption of growth. Having said that much, it is in terms of the work done within the framework of the Ninth Plan that the government will decide how many plants are to be built. There are certain criteria that the decisionmakers will have to bear in mind: First of all, in no case must energy, particularly nuclear energy, be a check on our growth. Let us not forget that the power plants that we shall built between 1984 and 1988 will produce in the mid 1990's and during the first decade of the next century, in other words, not immediately. Other decisive criteria: the technological progress which the power plants enable us to conserve, the industrial tool and the jobs that must be protected, and finally, the possibilities of exporting, either electricity or the power plants we shall have to develop. It is in terms of these four criteria that we should decide the number of plants and the number of phases possible to build during the time of the Ninth Plan. But we must also realize that building too many nuclear power plants would have a cost that we would all find on our electrical bills.

[Question] But are we now deriving the maximum advantage from the French nuclear electrical infrastructure?

[Answer] No, and that is a problem we have to solve. In the industrial domain, electricity consumption is inadequate. We must step up and accelerate the penetration of that electricity. That is the reason why we want to modify the industrial rate schedule. In the summer, for example, EDF rates should be even less expensive. Another possibility is heating homes with electricity, with one basic idea: Proper use of electricity first of all means continuous

use. By definition, household electrical heat is not continuous use and here also, we have to go case by case, thinking about the best type of domestic heat that can be used. That is why I asked the French Energy Control Agency to write a guide to domestic heating for private users. It is in terms of each situation that we must find an answer. The French must know that electricity is much more expensive to produce in the winter than the summer. Nuclear electricity makes it possible to lower prices for continuous use, by manufacturers, for example, but not for winter needs.

[Question] How do sales of our nuclear power plants abroad look?

[Answer] It is a market in which we have a good foothold, but it is a difficult market. The number of power plant builders has not dropped, while several countries have halted their nuclear programs and are therefore trying to export what they can no longer sell within their own borders. That is the case of the United States, the Federal Republic of Germany and Canada. At the present time, we are deeply into negotiations with two countries: Egypt and China.

[Question] And South Africa?

[Answer] No international call for bids has been issued. Therefore, the government is not involved.

[Question] Let us now turn to the EDF, which for 1982 has a deficit of some 8 billion. A recent report by the Commission on Competition, published by the periodical LIBERATION, questions the management of the enterprise, particularly agreements made with two of the EDF's main suppliers: the Empain-Schneider firm and the CGE [General Electrical Company]. What is your reaction?

[Answer] Together with the Ministry of Economy and Finance, we have ordered a report on the management of the EDF, which will be made by the Finance Inspectorate. It is a report whose content we shall naturally study with interest. Let one thing be clear: The EDF deficit is the result of a past management. And we made the pledge, a few weeks ago, to absorb that deficit over the next two years.

[Question] How?

[Answer] We have three possible paths: a modification in rates, an increase in turnover by that additional penetration by electricity of which I spoke, and finally, a thorough examination of EDF management in order to achieve that equilibrium that must be sought by any public enterprise. It is a balance needed for planning and looking ahead, as well as for the mobilization of EDF representatives and especially officials. That balance is demanded by strictness, democracy and a concern for performance.

[Question] Question] Recently, there has been a great deal of talk about a possible drop in oil prices. If that came about, would there truly be cause for rejoicing?

[Answer] The oil phenomenon must first of all be well understood, first of all, because we import 98 percent of that oil and it represents 48 percent of our energy needs. Second, in the world and whether we like it or not, the pric price of oil plays a reference role. Our wish? Here again, a wish for reason and reason demands that there be ho collapse or any exceptional hike. What happens, actually, if the price of oil falls? The foreign exchange income of producer countries, particularly Third world producers, will also fall, even though it is precisely those countries that need financing for their needs. They would consequently have their backs to the wall.

With respect to consumer countries such as France, I am afraid that mobilization on behalf of an energy saving policy and a rational energy policy will bear the cost of a collapse of oil prices. Now then, rational use of energy is a factor of industrial competitiveness, with major repercussions on our trade balance, the level of employment, purchasing power, our way of life, standard of living, and so on. It is that effort that is, in the long run, the only way to free ourselves of the oil yoke. It is the only lasting factor in reducing the price of oil. I would add that in the case of a collapse, it is the entire international monetary and banking system that will be at stake.

[Question] Imagine the opposite possibility: an exception price increase. What could happen in such a case?

[Answer] By way of analogy with preceding oil crises, we know that the situation would be very difficult. An increase in the energy bill would prohibit growth, with inevitable consequences for employment. That is why it is necessary for all consumer countries to invest starting now to reduce their use of oil, turning to other forms of energy. We must take advantage of the current relaxation on the oil market and continue our effort. Otherwise, the situation could become dramatic. Reason must win out.

Concerning oil, another idea seems fundamental to me. Oil is a form of capital and by definition, all capital eventually runs out. In the future, who will mainly need oil? The developing countries, that represent three-fourths of all mankind. If the Western countries are not careful, starting now, and fail to master the use of oil, there will be increasing tension between supply and demand, which cannot be the best way to give new content to the North-South dialogue. I mean that any policy for a rational use of oil and therefore, of energy, by France and other Western countries, is a contribution to the present and future growth of developing countries.

How can we successfully follow such a policy? By diversifying our energy supplies: coal and gas, naturally, but nuclear as well. I would remind you that in France, one cannot be both a Third Worldist and antinuclear. Another possibility of diversification is the promotion of new and renewable forms of energy. This policy waged by France is a perfectly coherent policy that corresponds to the goal of independence and sovereignty that we have set, as well as to the goal of decentralization that we pursue and the content we want to give to the North-South dialogue.

[Question] You mention decentralization. In the field of energy, how will it be implemented?

[Answer] A regional energy plan must be put into effect in each region because it is on the regional level that we can best master the rational use of energy, achieve the necessary energy conservation and develop the most exemplary accomplishments. In particular, I am thinking, on the level of territorial communities, of insulation, solar plans or even household waste plans. In France, if old tires were processed, it would enable us to save the equivalent of 330,000 tons of oil. No single central ministerial order will provide the necessary thrust. The regions and communes have a cardinal role to play.

[Question] But is there not a contradiction between the need for national energy planning and the desire for a regional energy policy?

[Answer] I do not think so. There are major decisions that are on the national level: all plans involving heavy investments, general lines of action and some incentives. But these incentives must be taken over at other levels so that the movement all up and down the line can be perfectly coordinated.

One example is housing. We have set up insulation systems, financing and subsidies, but if, on the local level, there are no competent architects, entrepreneurs or consumers with convictions and willing to march, then our standards, proposals and investments will have no effect. We need an effective relay system because the energy battle is also won at the level of the local communities.

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PRODUCTION CAPACITIES OF FIRMS MAKING NUCLEAR FUELS

Paris REVUE GENERALE NUCLEAIRE in French Nov-Dec 82 pp 534-536

[Unsigned article]

[Excerpts] AEC and Cogema, Uranium PUK [Pechiney Ugine Kuhlmann] and Framatome assume different positions in the production of various types of fuels, with designing provided by Fragema for PWR reactors, and by Cogema for other reactors.

Fuels for Gas-Graphite Reactors

These are currently manufactured only by SICN [Industrial Company for Nuclear Fuel] (100 percent subsidiary of Cogema), whose two plants are located at Veurey-Voroise (Isere) and Annecy (Haute-Savoie).

It receives graphite cores from Le Carbone Lorraine (PUK), and Mg-Zr claddings machined by Messier Hispano and by Forges de Bologne from designs supplied by Cezus (PUK).

The graphite jackets surrounding the fuel elements are fabricated by Cogema from SERS (PUK) or Union Carbide France designs.

Fuels for Heavy Water Reactors

These are manufactured by SICN (Industrial Company for Nuclear Fuel) (100 percent Cogema), particularly for the Brennilis reactor (EL4).

Fuels for Light Water Reactors

These are currently manufactured by Franco-Belge de Fabrication de Combustibles (FBFC) (13 percent MMN (Belgium) and 87 percent Eurofuel, itself a 51 percent PUK and 49 percent Framatome subsidiary) in its two plants at Romans (Drome), where the production is integrated from UF6 to assembly, and at Dessel in Belgium.

FBFC, whose present capabilities are 800 t (400 t at Romans and 400 t at Dessel), will have a capacity of 1000 t per year in 1983, thanks to expansions currently underway (600 t at Romans and 400 t at Dessel).

With a fabrication of 840 t in 1982, FBFC has already assumed the position of second largest world producer of PWR fuels, after Westinghouse.

In 1981, the western world market for enriched uranium fuels was 5800 t, with about 2500 t for Europe (OCDE); France supplied about 800 t.

As France's needs developed, CFC (Cogema, Framatome Combustible) (50 percent Cogema, 50 percent Framatome) built a manufacturing plant at Pierrelatte. The first section of the plant is expected to start operations at the end of 1983, and reach its annual capacity of 500 t/year in 1986.

Fragema (50 percent Framatome, 50 percent Cogema) sells all the French nuclear fuels, whether those manufactured by FBFC or those that will be manufactured by CFC beginning in 1984.

It is currently the world's largest supplier of PWR fuel, with 840 t in 1982.

The fuel assemblies supplied are the standard Fragema assembly, as well as the advanced French assembly resulting from a joint development with AEC.

Fragema is presently the major supplier of EDF [Electricite de France], providing 85 percent of its needs, and exports about 10 percent of the French production, notably to Belgium. For the first time this year, EDF uses a refueling ordered from KWU.

For the production of these fuel elements, the Zircalloy cladding tubes and soon the Zircalloy guide tubes, are supplied primarily by Zircotube (51 percent Uranium PUK and 49 percent Framatome); we will show this construction later. At present, the guide tubes that form the framework are produced by Cezus (100 percent PUK).

Fabrication of Fuels for Fast Neutron Reactors

This fabrication is characterized by two aspects:

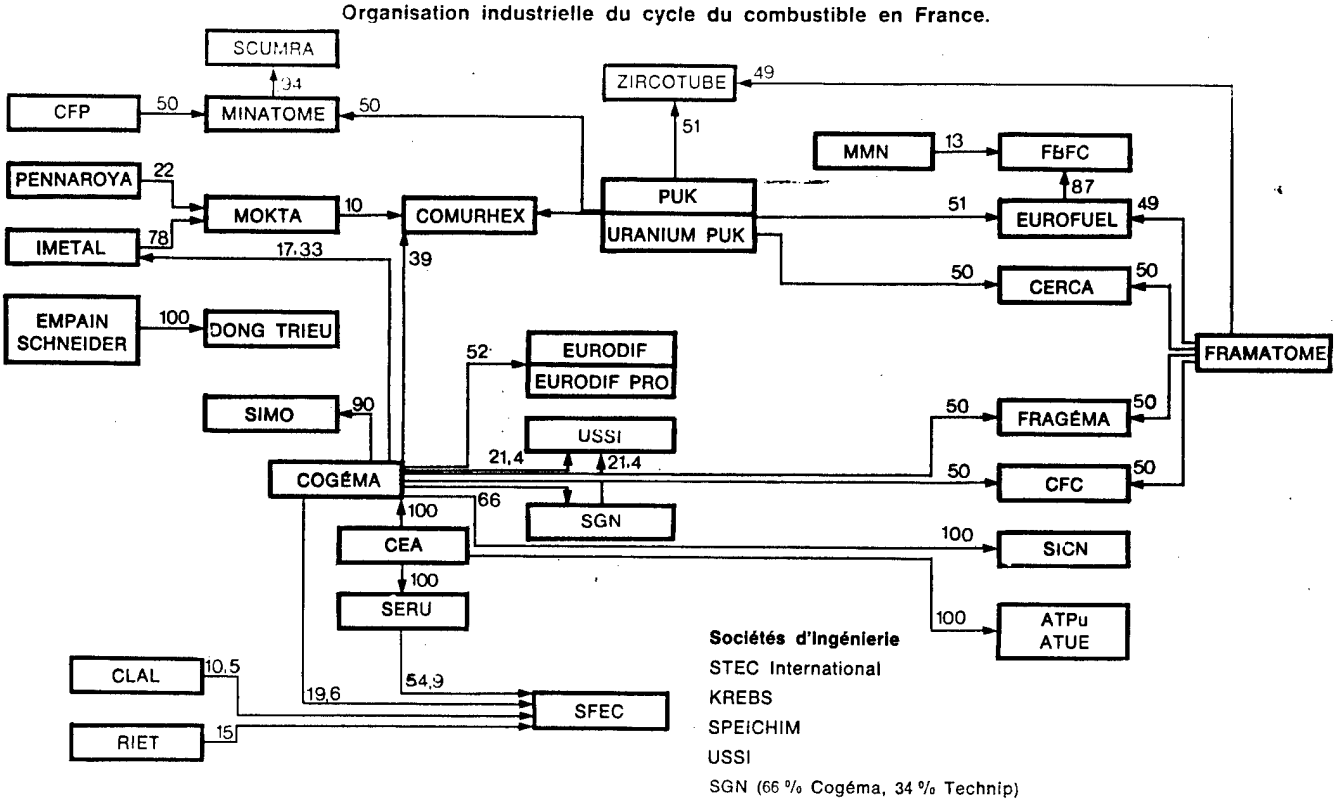
The preponderance of AEC and its 100 percent subsidiaries Cogema and SICN;

And because of the internationalization of Super-Phenix, by a division of tasks between France and other countries, notably Italy.

The fabrication of fuels for fast neutron reactors has several specific aspects:

First of all, those associated with the handling of plutonium, which has led AEC to develop this fabrication in its own installations;

Organisation industrielle du cycle du combustible en France.



Industrial organization of the fuel cycle in France.

Key: (A) Engineering companies
SGN General Company for New Technologies
CFP French Petroleum Company
CLAL Comptoir Lyon Alemard Louvot
SFEC French Company for Engineering and Construction
USSI Company for the Construction of Isotope Separation Plant
STEC Technical Company for Heating
SPEICHIM Company for Chemical Industry Equipment

Then, the present stage of development of the fast neutron method, which does not yet require very large production capabilities;

And finally, the cores of fast reactors contain in addition to the fuels themselves, various types of assemblies, particularly in the case of breeder installations, which are manufactured separately.

For the plutonium fuel assemblies, the production capacity of the AEC shop at Cadarache (ATPu) is presently a little higher than 20 t/year of uranium-plutonium, of which 18 t for the Super-Phenix installations alone, a capacity that could be rather easily increased.

The PuO_2 powders come from the Cogema reprocessing plants; the UO_2 powders from the Cadarache ATUE shop.

ATPu mixes the powders, compresses them, frits the mixed oxide, jackets the pins, and performs the final assembly.

The assembly structures are made by SICN (100 percent subsidiary of Cogema). The stainless steel-clad tubes and the hexagonal arrays are made essentially by Vallourec.

For the first Super-Phenix core, a limited portion of the cladding tubes were obtained in the United States from Carpenter Technology.

SICN now has at its Veurey (Voroize) plant the best adapted production installations, and has been charged with the essential portion of the fabrication of other types of assemblies.

For Phenix, CERCA (Company for the Study and Fabrication Atomic Fuel) has also been making for more than ten years part of the fuel assembly structures, and in particular, the reactor control rods.

For Super-Phenix, a multinational European installation, the Italian industry has been strongly involved in the fabrication of fertile assemblies and of the mock steel fuel assemblies of the first core.

For these breeder assemblies, the UO_2 powder was provided by ATUE and KBU (Germany).

The cladding is manufactured by Vallourec and Precitube.

For Super-Phenix, Novatome entrusted the contract for supplying the core assembly and its first two refuelings to Cogema, which in this complex industrial construction provides coordination and control for the various elements with all the guarantees customary in these matters.

Fuels for Research Reactors

CERCA (50 percent Framatome, 50 percent PUK) is the major manufacturer in France at its Romans plant. It is one of the three world leaders for enriched uranium laminated plates (93 percent high enrichment or <20 percent low enrichment).

Recent and large research efforts have allowed it to adapt its technologies to the fabrication of low enrichment (<20 percent) uranium elements, without major modifications of the fuel element, which can thus replace high enrichment fuels.

Its impact is international, since it obtains nearly one-half of its turnover in this activity abroad, with more than 25 percent of the world market, particularly in Japan.

AEC in turn, has developed a new fuel, also in the form of plates, and has begun to demonstrate it. Under the name of Caramel, this fuel is in the form of thin plates in which each square of uranium oxide enriched at less than 20 percent, is embedded in a compartment that is isolated from the outside and from neighboring compartments.

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LA HAGUE PLANS EXPANSION, INVESTMENT FOR WASTE TREATMENT

Paris REVUE GENERALE NUCLEAIRE in French Nov-Dec 82 pp 537-539

[Unsigned article]

[Excerpts] The program for reprocessing irradiated fuels is related to the development of nuclear power plants of different types: natural uranium/graphite-gas (UNGG), enriched uranium/light water (PWR), and fast neutron (breeder).

La Hague Projects: UP 2 800, UP 3, STE 3

The decision to expand the La Hague plant was taken in order to satisfy the growing fuel reprocessing needs created by the startup of the EDF [Electricite de France] 900 MW and 1300 MW PWR reactors. The two plants that are being planned will match the tonnage of irradiated fuel produced by the EDF power plants by the mid-1990's.

The expansions consist of three major parts:

The UP 3 project, a completely new installation of 800 t/year capacity (corresponding to the production of 30 reactors of about 900 MWe). The entire installation will be turned over to Cogema for startup in mid-1987;

The UP 2 800 project, which consists of expanding to 800 t/year the capabilities of the present UP 2 plant, by adding a certain number of new shops. The startup of the various units which compose UP 2 will be staggered until 1989;

The units common to UP 2 800 and UP 3, combining the general services needed by these two units (maintenance shops, power stations, facilities for processing STE 3 effluents). The startup of these joint units will be staggered until 1987.

Industrial Program for La Hague Expansion

A few figures will provide a better idea of the magnitude of these projects.

1. Investments

The expansion projects for the La Hague plant represent a total investment of 23.5 billion francs (based on the economic situation of July 1981), to which about 1 billion francs should be added for regional improvements (roads, collective equipment, and so on), as part of the La Hague "large site" program approved by the Interministerial Committee for Land Improvement. The essential portion of this investment will be made by the French industry.

2. Industrial Means

The completion of such a program requires about 380 million work hours in direct employment or the service sector, that is, 225,000 man-hours. The production time for assembly and fabrication (site, supplies purchasing, principal manufacturers, engineering), distributed over five years, corresponds to 6000 jobs per year at the site, and 15,000 jobs per year at major manufacturers and subcontractors.

3. Engineering

An association of engineering companies, headed by SGN, was created to handle this program. This association represents about 2500 persons and is formed around SGN by two other companies of the AEC group (Technicatome and USSI--Company for the Construction of Isotope Separation Plant) and by Technip.

French Reprocessing Technology Abroad

Thanks to the results obtained in reprocessing plants (the only ones to have a true industrial experience with PWR and BWR fuels), French reprocessing technologies and their associated activities (solidification of waste, vitrification, and so on) are the most advanced in the world. This favorable situation makes it possible for French engineering to export advanced technologies implemented in French installations.

That is why SGN has been awarded:

An engineering contract for the Eurochemic reprocessing plant at Mol in Belgium, started up in 1966;

And the engineering contract for the Tokai Mura plant in Japan (with a capacity of 200 t/year), started in 1979 and built in association with the Japanese company JGC.

Contracts are currently being implemented in various countries, among which:

Sweden: engineering and supply of various equipment for receiving and storing fuels for SKBF (expected startup in 1984);

Korea: engineering for a nuclear studies center at Taejon for KAEI (Korean Advanced Energy Research Institute) for processing uranium ore (with Cogema), conversion to UO2 and UF4 (with Uranium PUK), a fuel study laboratory, and a waste treatment facility;

Great Britain: for BNFL, construction of four vitrification lines for radioactive waste, designed by combining the AVM unit in Marcoule, and extrapolating the AVH shop studied for La Hague;

Belgium: preliminary studies for a vitrification unit at the Eurochemic reprocessing center in Mol;

FGR: preliminary studies for a vitrification unit for the Karlsruhe center.

Participation in other large industrial projects is currently anticipated.

Thus, thanks to technical and industrial developments, and to the results obtained, and thanks to its capabilities for exporting technologies or services for nuclear fuel cycles, the French nuclear industry as a whole is in a position to be a world leader.

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NUCLEAR R&D CARRIED OUT AT ALSTHOM ATLANTIQUE

Paris REVUE GENERALE NUCLEAIRE in French Nov-Dec 82 pp 545

[Unsigned article]

[Text] Standing research on materials and technology:

Means

Research centers for materials (metallurgy) and insulators.

Mechanical and acoustical research centers.

Delle-Alsthom testing and research centers (CERDA at Villeurbanne).

Associated centers (CGE--Compagnie Generale d'Electricite, CETIM--Technical Center for the Mechanical Industries, ONERA--National Center for Aerospatial Studies and Research, EDF--Electricite de France, schools, universities).

Actions

Turbine technology. This work started in 1971, when the 1000 MW prototype was designed. It has led to the creation of a 1300 MW model for PWR reactors and of a 1500 MW model for breeders, as described in RGN (REVUE GENERALE NUCLEAIRE) No 3/1982, as well as of its 1000 MW counterpart for exportation.

These are action machines which have widely contributed to the 16 percent improvement in efficiency for PWR plants in 20 years. They incorporate such new concepts as combined HMP single pass module, low pressure housing with independent shroud, new valves, balanced blades with continuous lacing, parietal intake diffusers, and so on.

Improvements have been achieved in reliability, efficiency, and weight; in engineering, the easy maintenance and adaptability to other cycles have led EDF to order eight of these new machines. Thanks to its research and development efforts, Alsthom-Atlantique depends on no one for technology.

In alternators, notable research has been conducted on cooling methods, excitation, as well as control and regulation devices.

In transformers and alternators with EDF, tests carried out at full short-circuit current have been unique of their kind.

In the area of electric equipment, environmental tests, as well heating (up to 50,000 A constant), electrical (4 MV pulses), and cutoff (5000 MVA up to 100,000 A) tests have also been conducted.

In pumps, Alsthom-Atlantique has performance and reliability test benches for reactor safety pumps, multi-cell pumps, and hydraulic experiments, such as cavitation.

For the longer term future, Alsthom-Atlantique together with EDF and the Marcoussis laboratories, is studying since 1972 the feasibility of cryoalternators. As a worldwide first, it has successfully brought to superconducting temperature a model rotor 2 meters long and 1 meter in diameter.

In the control of nuclear plant electric power, it has developed in connection with EDF, programmable automatic devices based on microprocessors, with a high level of safety and flexibility (Controbloc, adopted for 1300 MW models).

Work is continuing on the organization of control rooms (man-machine interface) and operator assistance.

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STUDY SHOWS PUBLIC DIVIDED ON NUCLEAR POWER PLANTS

Rotterdam NRC HANDELSBLAD in Dutch 24 Jan 83 p 3

[Report by Scientific Editorial Staff: "One Quarter of Population Favors Closing Down of Nuclear Plants; Majority of Netherlanders adopt Wait-and-See attitude: No Closing and No Expansion."]

[Text] The Hague, 24 Jan--One quarter of Netherlanders are in favor of closing down the two nuclear plants; 7 percent on the other hand favor expansion; the majority are adopting a wait-and-see attitude: no closing, but no expansion either. This is the result of an inquiry carried out by the Dutch Foundation for Statistics, by order of the Steering Group for social discussion on the energy policy.

The questionnaire was filled out last June by 1500 Netherlanders and may be considered representative of the Dutch population as a whole. The results were announced this morning by the chairman of the Steering Group, Mr M.L. de Brauw, at the time of the submission of the Interim Report to the government and parliament.

Over half of the Netherlanders expect that nuclear energy will be necessary in the long run to meet our energy needs (51 percent), while 36 percent, on the other hand, are of the opinion that nuclear energy won't be needed in the long run. Thus the majority of Netherlanders are of the opinion that nuclear energy may form part of a future energy policy in which a distribution of energy sources is sought: 19 percent of those find nuclear energy acceptable without question; 51 percent under certain conditions. On the other hand, 24 percent find such a policy unacceptable.

Low Opinion

The opponents of nuclear energy are mainly found in the small leftist parties, followed by PvdA [Labor Party], D'66 [Democrats '66], CDA [Christian Democratic Appeal] and VVD [People's Party for Freedom and Democracy]. The necessity of nuclear energy in the long run is seen by 78 percent of the VVD following, 60 percent of the CDA and 35 percent of the PvdA. The permissibility of nuclear energy is primarily linked to a political preference and to a lesser degree to age, education or religious conviction.

The inquiry shows further that over 40 percent are of the opinion that the vote of the individual citizen does not influence the thinking in political parties; especially the elderly, the less educated and leftists have a low opinion of politics.

There is even less faith in public forums organized by the government: 59 percent think that the opinion of the individual citizen doesn't carry any weight.

Thus it is not surprising that a great part of Netherlanders have sympathy for strong campaigns against nuclear energy. One quarter even find it acceptable that action groups go over to the occupying or blocking of nuclear plants, even when the government and parliament, after lengthy discussions, decide in favor of keeping the nuclear plants.

Tolerance toward such civil disobedience is not reserved only for opponents of nuclear energy, even though they do form the biggest slice. The question about civil disobedience literally reads: "Suppose the government and parliament, partly on the basis of the final report of the Broad Social Discussion, set a new energy policy for our country after 1983 in which besides other forms of energy there is also room for nuclear energy to generate electricity. What would your reaction be if persons or organizations who object to the use of nuclear energy then go over to the blocking and/or occupying of nuclear energy plants?"

To this question, 24 percent answered that that would be acceptable. On the other hand, 52 percent would find it understandable but not acceptable, while 23 percent have no understanding for such action groups, let alone find their actions acceptable.

It is notable that most Netherlanders aren't really very pessimistic about the energy problems. When asked which problems are the most serious ones, the order of importance is: unemployment, nuclear arms, environmental problems, social provisions, security of the citizen, and only then the energy problems, followed by income problems.

Optimism

That optimism about energy supply shows even more clearly in the ranking of problems for which a solution may indeed be expected. There, the energy problem is the first one thought of, followed by the income problem, environment, security, unemployment, while one was very pessimistic about the nuclear arms problem.

As causes of the problems in energy supply, Netherlanders see primarily their wasteful pattern of living, followed by the high prices of the oil-prodicing countries, the exhaustion of raw materials, the artificial price increases of the oil concerns, political problems in raw material countries, the too-late substitution of alternative sources of energy (sun, wind), the faulty government policy and the high demands imposed on the environment. In this series of answers, not changing over to nuclear energy in time is the last one mentioned.

It is noteworthy that persons with a high education put a different emphasis on the causes than those with a lower education. The latter see the cause of the energy problems primarily in high prices and in the political unrest in the oil countries, in the forcing up of prices by the multinationals and in the high environmental demands.

On the basis of a number of general knowledge questions, it turned out that Netherlanders in general are well able to judge their own knowledge of energy

problems. Those who say they are fairly knowledgeable turned out to be just that, while the opposite was also true.

It was surprising in this "hearing" that 76 percent of Netherlanders are under the impression that not petroleum, but natural gas, is our most important energy source.

Also, only a few know the exact place of the home in the consumption of energy. Only 21 percent knew that households occupy the second place in the consumption of energy, after industry, but before traffic and transport and other sectors such as agriculture and horticulture, hospitals, etc. Energy consumption in the home was systematically estimated too low.

Coal

How do Netherlanders expect sources of energy to develop? Growth is primarily expected in wind energy, solar energy and nuclear energy; to a lesser degree also in biomass (biogas, wood, etc.) and water power. Coal will remain unchanged, while tidal energy, geothermal heat and petroleum are not expected to increase significantly.

It is, however, very curious that a substantial contribution of alternative energy sources for the generation of electricity in the year 2000 is nevertheless not expected: 46 percent of Netherlanders put nuclear energy in the first place, followed by natural gas, petroleum, coal and, finally, solar and wind energy. Persons with a good knowledge of energy supply are somewhat more conservative; they give the traditional sources of energy a more important place in the year 2000.

The slow introduction of alternative energy is generally attributed to the high cost and difficulties in technical development. Mentioned only in second place are the low support in research and the low government subsidy. Only adherents of small leftist parties and to a lesser degree PvdA-voters think that the government and multinationals consciously resist alternative sources of energy.

Everyone whole-heartedly supports energy economizing. The manner in which it is to be achieved is not always the same, however. Half of the people mention savings on a voluntary basis, one quarter higher prices and another quarter government regulations. The better educated have the least faith in voluntary energy saving. The left opts primarily for government regulations and VVD voters for higher prices.

In a future energy policy the strongest emphasis would have to be placed on safety risks and the environment: price and seeking independence from other countries are of secondary importance. Apparently one is prepared to some extent to make sacrifices in the form of a higher price and a dependent position for environment-friendly energy.

It is certain, however, that politicians must not attach much value to this opinion. Even though 59 percent say that our life must be drastically modified, we still have to have sufficient energy available in the future (15 percent don't agree with that), but at the same time, half of the people think that the energy problem is highly exaggerated, for there are sufficient raw materials; 58 percent

even think that the need for energy economization could be exaggerated.

Whether the broad social discussion will have any results is not certain. Half the Netherlanders think that the influence will be relatively small while 36 percent are a little more optimistic.

It is to be hoped for De Brauw and his people that he will open up something with his interim report, for otherwise all the efforts would have been in vain. In any event, it would be pleasant for him if his Interim Report were to be received favorably; so far 56 percent Netherlanders are of the opinion that in official government publications a correct picture is not being given of the energy problems. Half of them think that the matter is being presented too pessimistically, while the other half think that the energy question is not treated seriously enough.

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PROBLEMS WITH NUCLEAR POWER PLANTS SEEN WORSENING

Stockholm DAGENS NYHETER in Swedish 7 Feb 83 p 2

[Editorial by Olle Alsen: "Cracks in the Armor"]

[Text] It now looks as though the poor design and quality of the reactors in Sweden may wreck nuclear power prematurely--at least some people think so. Experience around the world with so-called denting and other corrosion and rust damage to the thousands of tubes in the enormous steam generators of pressurized water reactors has led experts at the Swedish Nuclear Power Safety Inspectorate to estimate their useful life at only 10 to 15 years. And replacing the steam generators costs so many hundreds of millions of kronor, besides presenting such difficult radiation problems, that it might well prove more appropriate to shut them down completely.

In addition, the two new steam generators--Ringhals 3 and 4--have already been hit with a 1-year halt and a 1-year delay in startup respectively because of an entirely different design error in a new model of steam generator. And if the power industry itself is to be believed, every day that a reactor is shut down costs over 1 million kronor.

Probably the worst problem for the long term is the fact that Swedish steel in the reactors is cracking. Last year, many hundreds of large screws and a number of large girders in the brandnew Forsmark 1 and 2 reactors had to be replaced because of cracks due to a fault in an alloy. It was said to be a painful but one-time occurrence.

But it is now turning out that both small and large tubes--carrying radioactive water or steam--are starting to crack in Swedish reactors. They have been affected by the same intercrystalline stress corrosion, or so-called steel rot, that has already played great havoc with American reactors and forced the Germans more or less to replace all their tubing systems at enormous cost. It began with a series of leaks in the Ringhals 1 boiling water reactor, and the Nuclear Power Safety Inspectorate has now come out with an order to make a far-reaching inspection of the stainless-steel tubing systems and especially the welds in Oskarshamn and Barseback as well.

In Sweden, the industry is being threatened by more than shutdowns and tube replacements--to the extent that those are possible because of radiation. The

five boiling water reactors supplied by ASEA-Atom--two in Oskarshamn, two in Barseback, and Ringhals 1--are of such a very unusual, old-fashioned, and risky design that big tubing systems are developing holes at the bottom of the reactor vessels. If the leaks are not discovered in time because of dripping, and if a crack in a tube grows so wide and deep that its contents suddenly start gushing out, the tube may break. That could empty the reactor vessel very quickly, exposing the core and making emergency cooling from above impossible because the water would simply gush out again. That is the special Achilles' heel of Swedish boiling water reactors (the design at Forsmark is better) that leads the Nuclear Power Safety Inspectorate to say, in discreet but clear wording, that the problem is not only related to management: it is also "related to safety." Yes, one could certainly say that.

11798
CSO: 5100/2558

PROBLEM REACTOR IN WESTINGHOUSE PLANT TO BE REBUILT

Stockholm DAGENS NYHETER in Swedish 12 Feb 83 p 9

[Text] The Swedish Atomic Energy Board (SKI) will permit the State Power Board to rebuild the poorly designed steam generators at Ringhals 4. SKI believes that the proposed design is sound enough to permit the reconstruction of the steam generators at Ringhals 4.

In order to avoid the problem of wear in the steam generators first discovered at Ringhals 3, Westinghouse has designed a new feedwater distributor for the preheater section of the steam generators.

The State Power Board has conducted extensive and detailed experiments and analyses with the new design.

The permit to operate Ringhals 4 requires a decision by the SKI board. This decision probably will be made at a meeting in late March.

The State Power Board estimates that Ringhals 3, where the problem first was discovered, will be rebuilt during the summer of 1983.

Ringhals 3 was shut down on 20 October 1981 because of a leaking pipe in a steam generator. It was discovered that the leak occurred when one of the approximately 4,700 pipes in each of the three steam generators was so worn that a hole had developed in it. Thus, water leaked out of the reactor's so-called primary loop into the so-called secondary loop, i.e. into the water that is converted to steam to drive the turbine. This loop is closed, however, and there was no immediate danger of the spread of radioactivity to the environment. It was shown subsequently that the damage was due to a poorly designed preheater in the reactor.

Since the problem in the steam generator was discovered, Ringhals 3 has operated at reduced power.

In March 1982 SKI permitted Ringhals to begin test operations in which the poorly designed preheater was not used, in order to avoid pipe wear in the steam generators.

9336
CSO: 5100/2560

NUCLEAR POWER PLANTS EXPECTED TO OPERATE AT LOSS INTO 1990'S

Stockholm DAGENS NYHETER in Swedish 8 Feb 83 p 6

[Text] The government is planning to review the applications for permission to fuel the Oskarshamn 3 and Forsmark 3 nuclear power plants under the terms of a new law rather than in accordance with the current Nuclear Safeguards Law.

That was revealed by Minister of Energy Birgitta Dahl during an interpellation debate in Parliament on Monday. She made the announcement after Oswald Soderqvist (Left Party-Communists) asked whether the government intended to issue fueling permits for the two nuclear power plants that will soon be completed.

He wondered: "What will happen if the applications are received before the new law is ready?"

Birgitta Dahl said: "We are not compelled to use the Nuclear Safeguards Law in reviewing the applications. Our intention is to apply the new legislation that is now being prepared."

Ivar Franzen (Conservative Party) wanted to know what method Minister of Energy Dahl had used in calculating the cost of Oskarshamn 3.

She answered that according to the method whereby capital costs are not adjusted upward in line with inflation and are spread evenly over the life of the installation, Oskarshamn 3 will cost about 6 billion kronor. But she did not want to recommend a particular method of calculation.

Ivar Franzen said, however, that the total investment cost, including interest, would be closer to 12 billion than 6 billion.

He said: "The reactors will show a loss far into the 1990's. If Oskarshamn 3 had been an independent undertaking, bankruptcy would have been unavoidable. If the investments are to pay for themselves, the price of electricity will have to rise by between 20 and 25 percent a year."

Birgitta Dahl admitted that under the usual rules of business economics, the reactors will operate at a loss for the first few years.

She said: "But such large long-term investments as these can never become profitable in the first few years. It is also expensive, for example, to expand hydroelectric power, and we accept even higher costs in the case of hydroelectric power. The fact that Forsmark 3 and Oskarshamn 3 were more expensive than expected is due, among other things, to delays caused by the referendum and to stiffer safety requirements."

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END